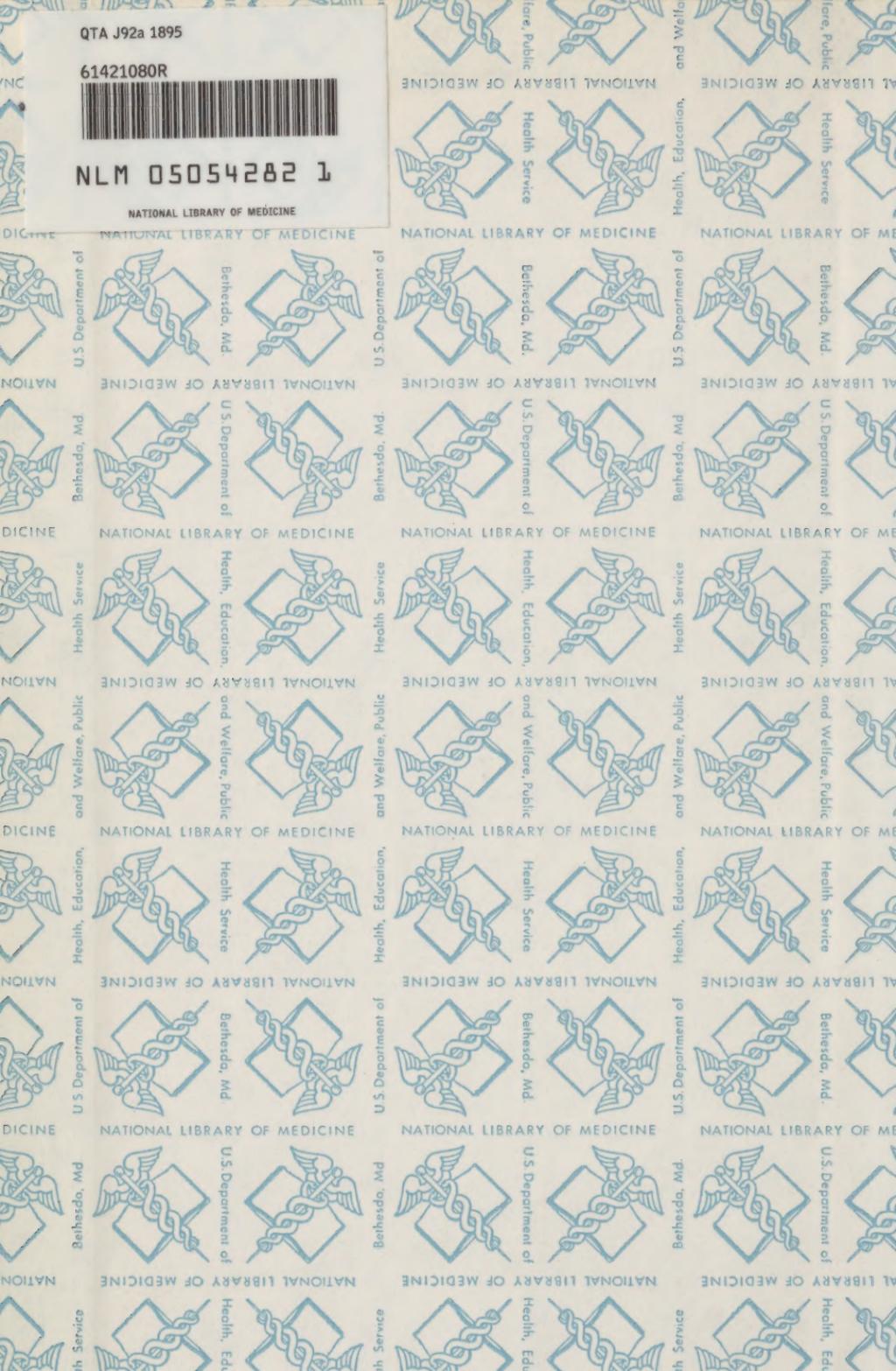


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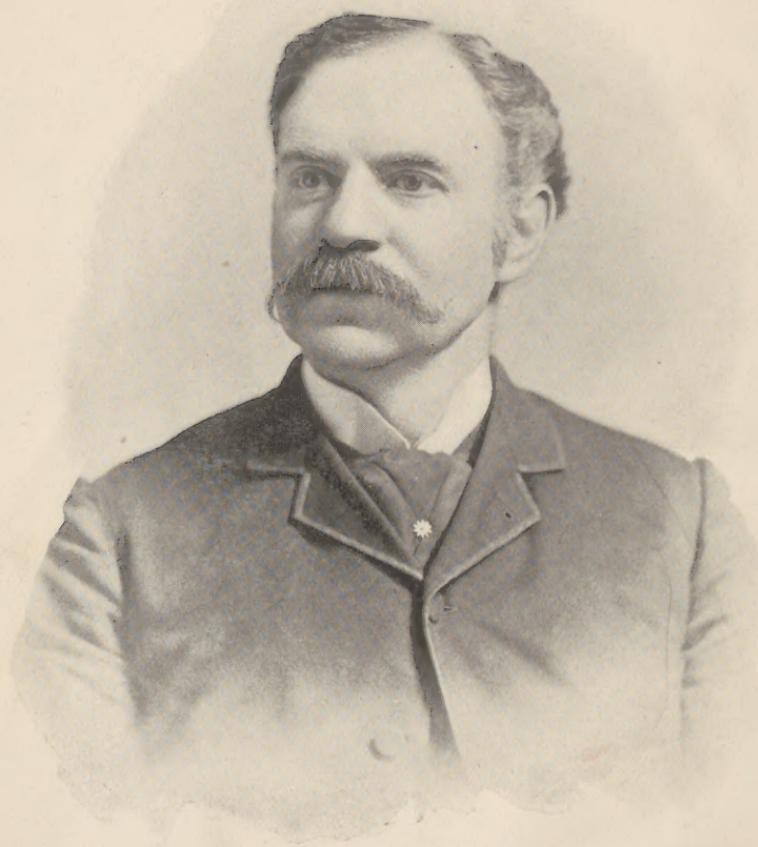
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ALWAYS STRONG AND HAPPY:

A COMPLETE SYSTEM OF TREATMENT

FOR THE

GENERAL CARE OF THE BODY,

WITH FULL DIRECTIONS FOR

THE DEVELOPMENT OF THE MUSCULAR SYSTEM.

*ADAPTED TO PERSONS OF SEDENTARY HABITS, AND
THOSE WISHING A HIGHER SYSTEM OF
PHYSICAL DEVELOPMENT.*

BY

J. R. JUDD,

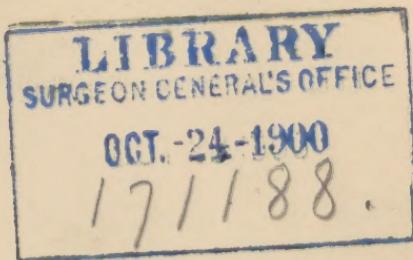
*Professor of Physical Culture, and Trainer of Conneff and
other distinguished Athletes.*

THIRD EDITION, REVISED.

NEW YORK:

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1895.



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PREFACE.

We should train the body as well as the mind, or eventually we will become a race of dyspeptics, or mere pygmies—all mind and no matter; mere bundles of nerves. These expressions as applied to the American people have within the last few years become stereotyped. How much truth there is in them may be judged from a walk along the business street of a thriving American city, and how fully our people are beginning to realize the fact may be judged by the avidity with which they peruse books of hygeian physical culture, systems of gymnastics, etc. The demand for this class of literature has attracted to the field those not qualified to speak with authority, and others whose knowledge is so great (?) that ordinary people are easily frightened off by the mass of medical technicalities hurled at them from time to time.

After carefully noting and digesting the many works purporting to contain the “only proper method of physical development,” the author determined to give to the public a system which he has used for thirty years with the most gratifying success. The structure of the human body is outlined and illustrated, so that the reader may more readily and more completely understand subsequent instructions. The names, locations and functions of the important muscles are given, as well as the effect of various motions on, and the best methods of developing the same. All the movements are fully explained and illustrated, so that even the most inexperienced may understand. For anything recommended in this book reasons are given that will commend them to the logical reader.

By a proper observance of the instructions given a most surprising improvement in the system may be brought about.

PREFACE.

Not only may the weak become strong, but even persons suffering from deformities may obtain much relief.

The author can refer to many leading physicians, in this and other cities, who have sent their patients to him for treatment. Many of them were mere physical wrecks, but in nearly all cases the happiest results were obtained.

The offspring of healthy parents come into the world with a certain amount of health and strength, and the maintenance of that health and strength depends upon the proper observance of the laws of hygiene and exercise. But under the stress of social or business duties, or both, how few find time to properly repair the waste of excessive mental labor and close confinement in ill-ventilated offices, etc. The result of this neglect is plainly to be read in the careworn, nervous faces and physical poverty of the average man one meets. The day-laborer eats heartily and sleeps well, and to enjoy either the one or the other artificial means must be used by sedentary people. Probably the most simple means of obtaining good results is by the use of dumb-bells. My method of calisthenics is by self-action, contraction, extension, kicking, jumping, striking, leaning arms and body from right to left, forward and back, and moving the head in all directions to work the neck. Of course, there are muscles which cannot be strongly developed by this method, but for all practical purposes these are sufficient, and must form an important part of each system.

For the proper presentation of the subject the author has deemed it best to treat it in subdivisions.

ALWAYS STRONG AND HAPPY.

THEORY OF DEVELOPMENT.

TO BE THOROUGHLY UNDERSTOOD BEFORE PROCEEDING WITH
THE EXERCISES.

The mind or the brain is the great controlling power which orders and directs all movements of the muscles. In all movements of any part of the body or limbs, be they either pulling or pushing motions, the different muscles brought into action to perform such motions will extend as much as they will contract, and *vice versa*. In short, in whatever direction the body or any part of the body is moved, the muscles required for that exertion will extend as much as they will contract. As an illustration of this law, one has but to elevate a dumb-bell, at the same time noting the effect on the muscles employed. When in the act of pushing up, the muscles are expanded and rigid; when lowered they contract to their normal size and position. The same effect may also be observed by taking the handles of a pulley-weight machine, and pulling them towards the shoulder with the finger-nails of the hand upwards.

Many gymnasts and professionals teach their pupils that by standing in an erect position and throwing their arms violently backward they can develop the muscles of the chest. This I hold to be a grave error, as the motion merely contracts and then expands the back muscles, and therefore is more beneficial to the back than to the chest muscles. In raising the arms the muscles required are those on top of the shoulder called the deltoid, and in carrying them back the trapezium muscles, or those between the shoulders, are affected; but a forward motion of the arms requires the use of the chest

muscles, and it is only by movements of this kind that those muscles can be developed.

To further prove the correctness of my method, let me give you an illustration. If a person stands before two upright bars, and taking hold of them, forces the arms behind by a forward motion of the body, as shown in the illustration, Fig. 1, it will be found that while the muscles of the chest will be rigid and extended, the muscles of the back will be perfectly



FIG. 1.

flaccid and relaxed. It is only when pressing forward on the uprights, as shown by the dotted line illustrations, Figs. 2 and 3, that the muscles of the chest are brought into full play. To prove this, have two persons stand at either side of you at full arm's length and try to push them forward from you with the palms of the hands. Instantly the muscles of the arms and chest become active. On the contrary, turn round and try to push the persons backward with the backs of your

hands. This will exert the back muscles, while those of the chest are flaccid. So, then, the only true way to develop the muscles of the chest, or in fact any muscle, is, first by expansion, then by contraction.

To develop the various muscles of the body by dumb-bells, pulley-weights or other apparatus requires the body or limbs

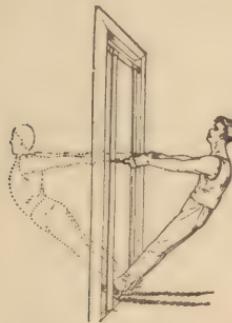


FIG. 2.



FIG. 3.

to be placed in different positions, in order that they may be both contracted and expanded.

GENERAL ADVICE.

There is a great deal more exercise in making thirty rapid motions with a three-pound dumb-bell than there is in three movements with a thirty-pound dumb-bell, and persons taking these exercises should bear this in mind. Muscle develops much more quickly with medium-heavy weights than by light weight exercise, which, if done rapidly, will use you up more quickly than heavy exercise if done slowly. A person who says he has held out a ninety-five pound dumb-bell, and lifted 1,400 pounds by hand, advises every person to use light weights, and according to his statement is the strongest man in the world. How did he obtain this development? By lifting heavy weights? There is no record of any man in the world holding out more than sixty pounds, that is, standing nearly upright, feet six to eight inches apart, and holding the bell out straight in line with the two shoulders.

See Fig. 4. If a man could hold out ninety-five pounds he should weigh nearly three times that weight ; this any practical man knows. How did Hercules carry the calf until it became a cow, but by lifting it every day. A man that advises in this way contradicts the method he followed to become strong, and there must be a reason for it. For further remarks on the errors of such teaching, see pages 34 and 41.



FIG. 4.

The muscles brought into activity by the use of pulley-weights are those, in whatsoever direction you pull ; if

downwards when facing the machine and you are pulling with both hands, it is the muscles leading from the palms of the hands up under the arms to the chest. If your right side is towards the machine, and you are pulling downwards to side with the right hand, the muscles being exercised commence from the hand to under the arm, bringing in the inner part of the bicep and tricep, connecting pectoral and dorsal, or the four parts under the arm-pit. The leg muscles are affected in the same way if in said position, and *vice versa*, with the left arm or leg. If you face the machine and pull backwards, you are working your back muscles ; if pulling forward with back to machine you are working your front muscles ; the same in pushing with any portion of the body. In pulling and pushing the actions of the muscles are the same if the resisting pressure is before you and in the same place. The difference is that one is pushed before you, while the other hangs behind you when you push it forward. The difference comes in here. When you let weights back over a pulley from behind you, it has the leverage on you and an impetus to pull you backwards, whereas the weight pushed before you has no impetus or tendency to pull you back, but a tendency to push you back-

ward. In whatever is the direction of the motion, so the impetus is to resist, and the muscles following in that direction are the muscles being exercised and developed, if not over-worked.

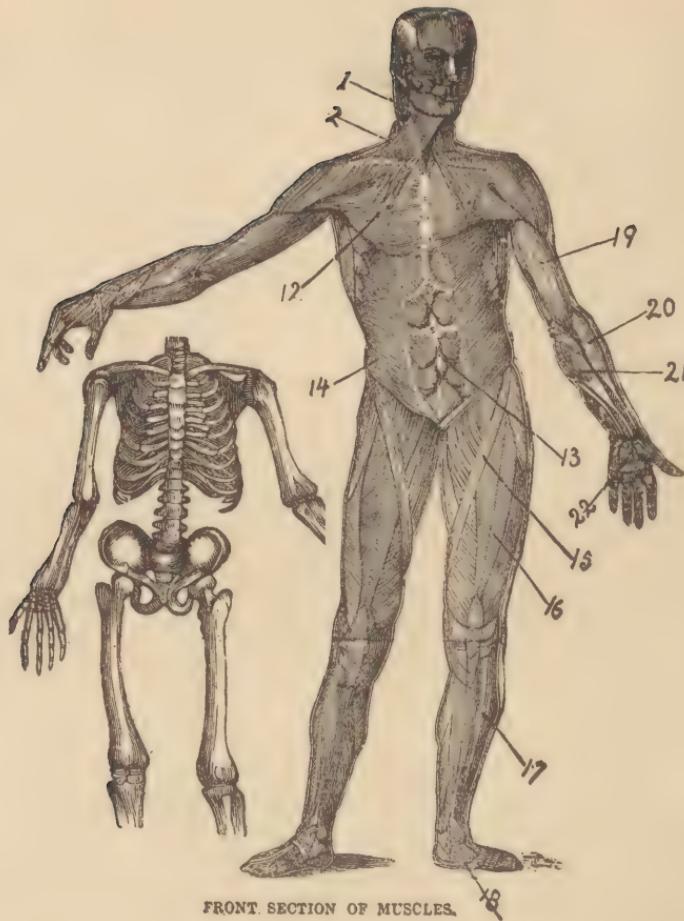
There is no such motion as a striking motion on a pulley-machine, for to strike properly the muscles require to be loose, see Fig. 5, as every practical man knows. The muscles affected when the resisting pressure is come into contact with are every muscle from the hand to the elbow, thence to the back-arm or triceps, bringing in the deltoid muscles, as you must turn sideways to strike any effective blow; the fore-arm being the first affected, mostly at the elbow; secondly, the back-arm; thirdly, the front part of the deltoid; then the dorsal, and others in the loins, downwards to the leg and foot, without the aid of which you could not strike a heavy blow, as the resisting power comes from the foot.

Persons taking these exercises should avoid the advice of charlatans, who have not sufficient experience or knowledge of the necessities of even ordinary cases to be of any benefit whatever.

I am very much in favor of self-contraction of muscles, to aid the development of them. This you can learn by constantly trying and learning from others in a gymnasium, and paying attention to the methods herein laid down by which they are contracted; for instance, place your hand at the back of your thigh, and pull forward for biceps, fore-arm, front of deltoid and pectoral; for back-arm, push backwards by placing back of hand in front of thigh, and so on with leg, arm or body. This can be done, remembering that every time you turn the hand, foot or body different parts of

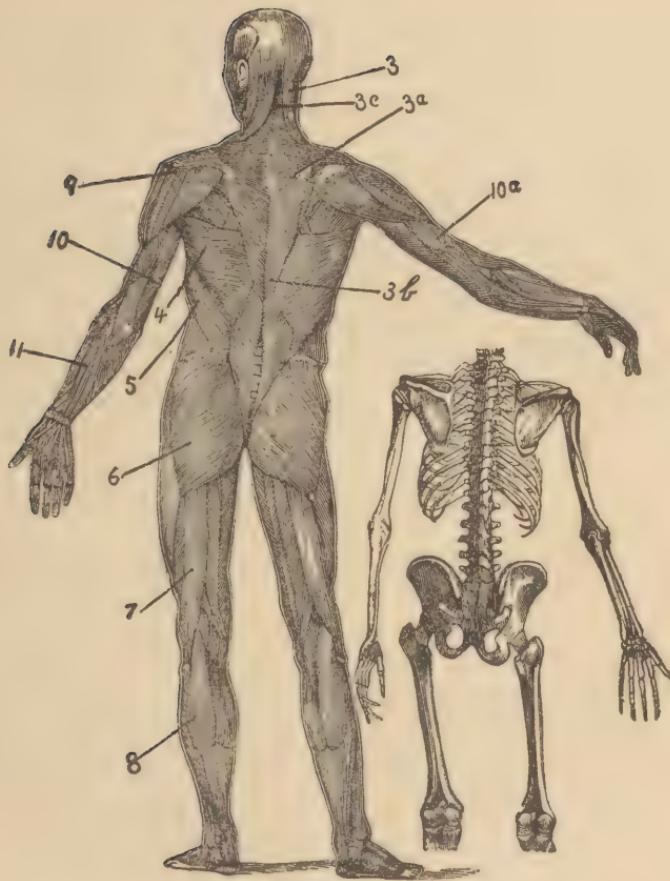


FIG. 5.



FRONT SECTION OF MUSCLES.

- No. 1 and 2.—Neck muscles.
- No. 12.—Pectoral major, or chest muscles.
- No. 13.—Abdominal muscles.
- No. 14.—Oblique, or muscle at loin.
- No. 15.—Sartorius muscle, front of leg passing from outer part of hip to inner part of knee.
- No. 16.—Rectus muscle, or front of thigh.
- No. 17.—Tibialis Anticus, or shin muscle.
- No. 18.—Muscles at bottom of foot.
- No. 19.—Biceps, or front upper arm muscle.
- No. 20 and 21.—Supinator longus, Radialis and their group, or forearm muscles.
- No. 22.—Palm of hand muscles lashed around and running to the end of each finger.



BACK SECTION OF MUSCLES

No. 3.—Neck muscle.

No. 3a.—Trapezius muscle attachment at shoulder.

No. 3b.—Lower point of Trapezius muscle at center of back.

No. 3c.—Upper point of Trapezius muscle at base of skull.

No. 4.—Dorsal muscle at back of armpit.

No. 5.—Oblique muscle, or muscle at the loins.

No. 6.—Posterior muscle, or gluten region.

No. 7.—Bicep muscle back of thigh.

No. 8.—Gastrocnemius, or calf muscle.

No. 9.—Deltoid, or shoulder muscle.

No. 10.—Inner fork of Triceps muscle, or inner part of back of upper arm.

No. 10a.—Outer fork of Triceps muscle at outer part of upper arm.

No. 11.—Ulnaris and Digitorum, or muscles of back lower arm and group.

the muscles are brought into play in pressure exercise. The muscles taken always follow from the direction you are pulling or pushing.

HOW TO MEASURE.

For the benefit of those wishing to make careful notes of their relative condition, and to study their physical improvement, the following table of measurement has been arranged by the author as a guide. The measurements should be taken with body erect in its natural position, and are most reliable when the body is in a nude condition.

Date.	
Name.	
Age.	
Height.	
Weight.	
Neck, below apple.	
Chest contracted, close around under arms and above nipples.	
Chest inflated, close around under arms and above nipples.	
Width of shoulders.	
Upper arm, right, straight out.	
Upper arm, left, straight out.	
Fore-arm, right.	
Fore-arm, left.	
Waist.	
Hips, largest part.	
Thigh, right, thickest part.	
Thigh, left, thickest part.	
Calf, right.	
Calf, left.	

SHOULDERS.—This measurement should be taken around the body and outside the arms just below the shoulders.

CHEST MEASUREMENT.—Should be taken non-inflated and inflated (to be healthy a person should show two inches inflation), measuring around the nipples and over the largest part of the dorsal muscles, and all measurements should be taken around the largest parts. You may take your dimensions again in a week or two after commencing exercise, but a monthly interval would be a better criterion to go by. You must take into consideration a person's age, occupation, disposition, state of health, and whether fat or slim, also the parts they have exercised and the length of time before coming to a decision why the body has increased or decreased ; bearing in mind that the old will not develop as rapidly as the young, neither will he who is on his feet or under mental excitement the most part of the day, as a stock broker, which, of course, eventually must make the strongest man nervous and reduce his weight.

General shape of body on commencing should always be made note of. For instance, if the right hip stands out more than the left ; difference in shoulders, if any ; if the spinal column is erect ; if the person leans forward or back, etc.; and statement of his general health. Then you can follow a proper course of treatment.

WEIGHT AND MEASUREMENT AS A TEST OF PHYSICAL CONDITION.

The writer has found in his experience that a man's weight, in good condition, cannot be accurately judged by the measurement of his chest alone, and to arrive at a definite conclusion in this regard it is necessary to measure also the neck-bone and chest, as explained in the accompanying table.

To illustrate the effectiveness of this table as a guide, attention may be called to the difference, apparent to the most casual observer, between a race horse and a draught horse. The latter has more muscle, breadth, bone and strength than a race horse of the same *height* and *length*. The race horse, although standing as high and measuring as long as the

draught horse, not having as large bone cannot carry so much flesh, neither was it intended he should.

A man preparing for a wrestling match, lifting or throwing a stone, may be much heavier than one training for any rapid motion, as running, fighting, racket or hand-ball.

TABLE SHOWING WHAT A MAN OF TWENTY-ONE YEARS SHOULD WEIGH WHEN IN GOOD CONDITION AND WELL DEVELOPED.

Commencing with the measurements at five feet as a rule, and then adding additional allowance for extra measurement, as stated in the following table :

(These measurements should be taken very tight on a corpulent and loose on a spare person.)

MEASUREMENTS.

Height.....	5 feet.
Weight.....	103 pounds.
Neck.....	12 inches.
Chest (uninflated).....	33 "
Wrist.....	5½ "
Ankle.....	7½ "
For every inch in height add.....	1½ pounds.
For every inch around neck add.....	½ "
For every inch around chest add.....	1½ "
For every $\frac{1}{8}$ inch around wrist add.....	½ "
For every $\frac{1}{8}$ inch around ankle add.....	1½ "

The above tables will be found accurate and reliable, as they have been repeatedly tested by the author during his professional career. They represent the result of a personal observation after having measured over 3,000 men.

It is not, of course, asserted that a very good condition of health may not be enjoyed by some persons whose measurements do not conform to the above tables, but such persons cannot be regarded as specimens of symmetrical development, or of true physical proportion.

The following tables I have revised from my previous editions (which I notice have been used to a great extent by professional men and trainers in general, they making slight changes in order to make it appear different, the 1874 table

being the first introduced to the public). The change is to show the three distinct weights of athletes.

First.—Runners, including cross country, hurdle jumpers, and lacrosse players in good condition.

Five feet, 0 inches,	99	to 102	pounds.
" "	1 "	101 $\frac{1}{2}$	to 105 $\frac{1}{4}$
" "	2 "	104 $\frac{3}{4}$	to 108 $\frac{3}{4}$
" "	3 "	108 $\frac{1}{4}$	to 112 $\frac{1}{2}$
" "	4 "	112	to 116 $\frac{1}{2}$
" "	5 "	116	to 120 $\frac{3}{4}$
" "	6 "	120 $\frac{1}{4}$	to 125 $\frac{1}{4}$
" "	7 "	124 $\frac{3}{4}$	to 130
" "	8 "	129 $\frac{1}{2}$	to 134 $\frac{1}{2}$
" "	9 "	134	to 139 $\frac{3}{4}$
" "	10 "	139 $\frac{1}{4}$	to 145 $\frac{1}{4}$
" "	11 "	144 $\frac{3}{4}$	to 151
Six "	"	150 $\frac{1}{2}$	to 157

The A1 walker or acrobat in good condition should weigh a trifle heavier than noted in the above table.

Second.—Table for fighters, base-ball and foot-ball players, gymnasts, swimmers, oarsmen and wrestlers, except Greco-Roman, who will come in the heavy class:—

Five feet, 0 inches,	102	to 105	pounds.
" "	1 "	104 $\frac{1}{2}$	to 109 $\frac{1}{4}$
" "	2 "	108 $\frac{3}{4}$	to 113 $\frac{1}{2}$
" "	3 "	113	to 117 $\frac{3}{4}$
" "	4 "	117 $\frac{1}{4}$	to 123
" "	5 "	122 $\frac{1}{2}$	to 128 $\frac{3}{4}$
" "	6 "	128 $\frac{1}{4}$	to 135
" "	7 "	134 $\frac{1}{2}$	to 142
" "	8 "	141 $\frac{1}{2}$	to 149 $\frac{3}{4}$
" "	9 "	149 $\frac{1}{4}$	to 158 $\frac{1}{4}$
" "	10 "	157 $\frac{3}{4}$	to 167 $\frac{3}{4}$
" "	11 "	167 $\frac{1}{4}$	to 178 $\frac{1}{4}$
Six "	"	177 $\frac{3}{4}$	to 189 $\frac{3}{4}$

Third.—Table for strong men, lifters and dumb-bell pushers, the average is about 10 pounds more all through the above table.

In the preceding tables the height given is to be taken in the stocking feet and the weight is given for a person from 21 years of age to 23 years ; after that he will increase, if healthy, in the first class 1 lb., in the second class 2 lbs., and the third class 3 lbs., every year up to 38 years, when he is up to about his highest weight, and not more, if he takes good care of himself and does not indulge in liquor, ales, beers, etc. If he does not take this latter precaution he will increase much more.

A man competing for any of these feats will immediately see the weight he ought to be, within a pound or two.

I have been formulating these tables for a long time and find them correct.

A person commencing at less than the lightest weight given in either of these tables, if healthy, and continuing to exercise properly, will increase in weight from year to year as he grows older, until he reaches the heaviest weight given if he be properly classified.

SPECIAL DEVELOPMENT.

NECK EXERCISE WITHOUT DUMB-BELLS.

Exercises for the neck which may be practiced by the beginner for several days before undertaking the more severe ones.

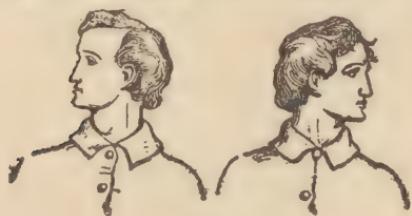


FIG. 6.



FIG. 7.

1st Exercise. Turn the head from right to left quickly, as far as possible, making a pause between each motion. Fig. 6.

2d Exercise. From front to back quickly, making a pause between each motion. Fig. 7.

3d Exercise. Lower the head on the right shoulder, then on the left, not turning the face, and make a pause between each motion. Fig. 8.

4th Exercise. Revolve the head well around to the left,



FIG. 8.



FIG. 9.

rest; then revolve to the right, say six times each way, as at first. Fig. 9.

Neck exercise by pressing the hand against the head is an old-fashioned method, practiced mostly by the Swedes and Germans. This method is as follows: In whatever direction you move the head, press the hand against it as if to force it in an opposite direction; or allow a second party to press it likewise in an opposite direction. Thus when you move the head forward, endeavor to press it backwards, or *vice versa*. This motion is to be made about ten times each way.

These exercises thoroughly performed will properly prepare the muscles of the neck for the more severe exercises.

NECK EXERCISE WITH WEIGHT.

In this exercise it is necessary to procure a scull cap, with strap to attach a pillow, sand or bean bag, or to pull it with hand in opposite direction from which you try to force the head. Fig. 10.

The exercise consists in swinging the bag round the body, first one way, then the other. Commence by swinging six



FIG. 10.

times to the left, then six to the right, twice a day if possible ; after a week's practice the weight of bag and number of times may be increased.

The weight of the bags to be used by any ordinary strong adult should be from 3 to 6 pounds. For a boy, girl, or weak person, 1 to 3 pounds. For a child, $\frac{1}{2}$ to 1 pound. Helmet exercise is the same as bag. (For helmet or skull cap consult Prof. Judd.)

These exercises are intended to develop the muscles of the neck, more especially those which lead from the chin to the shoulder, from back of neck to shoulder, and from butt of the ear to the breast bone. (The stronger the muscles of the neck the better able you will be to protect the nerves and arteries, and carry a well developed brain.)

Very little attention is usually given to these muscles, but they *are very important* to the general health, and close attention to them will result in wonderful improvement, toughening them and rendering you far less liable to suffer from bronchial affections.

HEAVY NECK EXERCISES WITH DUMB-BELLS.

The dumb-bells to be used in these exercises are as follows:

For an adult strong person 20 to 40 pounds.

For an adult of ordinary strength..... 12 to 20 pounds.

For a boy, girl or weak adult..... 4 to 8 pounds.

A heavier bell should be used for a male than a female of the same age. Beginners should always use a light weight at first.

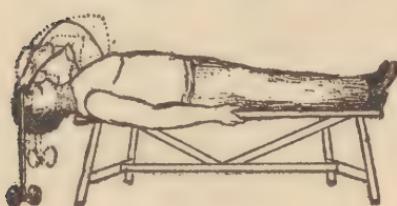


FIG. 11.

1st Exercise. Use the skull cap, or attach a long strap to the handle of the dumb-bell by making one turn round it, or by fastening the strap to a short strap buckled around the handle of a bell ; then lay yourself on a bench, sofa or settee, face downwards, the reverse of Fig. 11, the head suspended ; then place the strap

short strap buckled around the handle of a bell ; then lay yourself on a bench, sofa or settee, face downwards, the reverse of Fig. 11, the head suspended ; then place the strap

(which, if desired, may be padded) around the back of the neck, and lift the dumb-bell clear from the floor, raising the head up and lowering it as far as possible. Continue this several times, say from 8 to 15, or until you are assured the muscles have been sufficiently exercised. This method should be repeated once or twice a day for a week, after which the weight of the dumb-bell and the length of time of exercise may be gradually increased.

A greater weight, however, than 30 pounds should never be used in this exercise, except by very robust persons.

2d Exercise. This exercise can also be reversed by lying on the back with the strap across the forehead. See Fig. 11. The strap must be held by the hand to prevent it slipping.

3d Exercise. The same exercise can also be practised whilst lying on either side. Fig. 12.

Always bear in mind in these exercises that the uppermost muscles are doing the work. For instance, when lying on the back and lifting the weight, as illustrated in Fig. 11, the front muscles of the neck are those being exercised and specially developed. The skull cap is the best to use in these exercises, or similar device.

MUSCLES OF SHOULDER, OR DELTOID MUSCLES.

When exercising the muscles on top of the shoulder with dumb-bells, stand erect, chest well expanded, head up, arms straight by the side, with dumb-bells in the hands, and back of the hands outwards.

From this position raise the arms at the side, in line with the shoulders, back of the hands upwards. See Fig. 13. Then lower the hands again, and so repeat six to ten times; then with forefinger and thumb up; then from front part of shoulder, with finger-nails up, body leaning backwards, the same number of times; then from back of shoulder with little finger up, leaning forward same number of times.

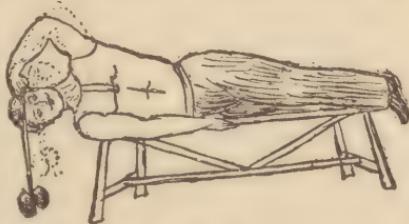


FIG. 12.

The weight of dumb-bells to be used in such exercises should be as follows :

For an adult of ordinary strength.....5 to 6 lbs.

For an adult of robust strength.....6 to 10 lbs.

For an adult of feeble strength.....2 to 3 lbs.

Although I have seen heavier weights used, I would not recommend their use, except after long practice.

See record of holding out weights, appendix.

In raising the arms, such as in deltoid exercises, or any other motion in which the arms are raised above the head without much weight in hand, the lungs may be inflated, as they do not



FIG. 13.

contract the chest muscles, which would prevent the full inflation.

Persons going through these exercises would do well to remember that by turning the hands they are exercising the muscles of the arm and shoulder differently; also that when the arm is raised the uppermost muscles of the arm are doing the work. See Fig. 92 on pulley-weights. Also Figs. 93, 94, 95, 87, 88 and 90.

Caution against exercising to excess should be heeded, in order to prevent an unnecessary soreness, which is not at all beneficial or desirable. Any soreness caused by overwork or

straining would only have the ill effect of retarding the development.

Dumb-bells of lighter weight should be used by females or youths, according to their age or health. After a week's practice, if strength gains, increase the weight of bells and number of motions. The time to take a full breath is when the muscles are relaxed, and not when contracted, although a person may raise the arms above the head without anything in the hands, and inflate the lungs and benefit themselves. For special development of the lungs and inhaling when exercising, see page 56.

BICEPS.

Weights of dumb-bells to be used in these exercises are as follows :

For male adult, robust health.....	8 to 20 lbs.
For male adult, medium health.....	7 to 8 lbs.
For male adult, feeble health	4 to 5 lbs.
Female adult and youths...Same as male in feeble health.	
Female adult, if extra strong....Same as male in medium health.	

The starting position for this exercise is body erect, arms down close by the side, chest well expanded, keeping the elbows well into the side, dumb-bell in each hand, feet apart about 10 inches.

Curl the dumb-bells until finger-nails come in line with outer and front part of shoulder ; turn the hands in toward the wrist as you pass the elbow, bringing finger-nails toward you ; by doing this you will curl the bells much more easily, and improve the fore-arm much more.
Fig. 14.

This exercise can be done in three ways : first, with both hands ; second, with right or left hand ; third, with each hand alternately, say twenty times, more or less, each way.

In this exercise the bicep muscles are at their greatest ten-



FIG. 14.

sion, when the arms are at right angles. The muscles are rested when the arms hang down at full length, or when the hands are raised in line with the shoulder, especially if you lean back a little.

If it is the desire to work the muscles harder, make the motion more rapid, and do not let the arms down to their full extent or curl them quite up to the shoulder. See biceps on pulley-weight, Figs. 83, 89, 92, 101, 102.

TRICEPS OR BACK UPPER ARM WITH DUMB-BELLS.

To develop these muscles stand with the body erect, dumb-bells in hands, from four to six pounds for robust persons; then step forward with either foot, at the same time lifting



FIG. 15.



FIG. 16.

the arms up (bells in hands) as far as possible behind you, with backs of hands upwards. See Fig. 15. Returning back to first position, continue this about twenty times, stepping out alternately with each foot. This exercise can be done with both hands together, with finger nails or back of hand uppermost, without stepping out; feet apart about ten inches, say twelve times each way; also with one arm forward and one back, say ten times. See Fig. 16.

The exercise with back of hands up behind you is to develop both prongs of triceps and back of deltoid, and when finger-nails are up the inner prong of triceps is developed specially.

With back of hand up, arms forward, the outer prong is developed, together with the deltoid and muscles leading thereto, from hands up. With front of hands up, arms forward is for muscles from palms of hands in line therefrom up to shoulder. The triceps may also be developed by lying face downward on a stool, reverse of Fig. 17. Dumb-bells in hands, back of hands upward, raise the arms up to full extent in line with shoulders; then drop arms down and so on; continue ten to twelve times. This exercises the trapezium muscles also, which are located at the back between the shoulders. You will find this a very hard exercise.*

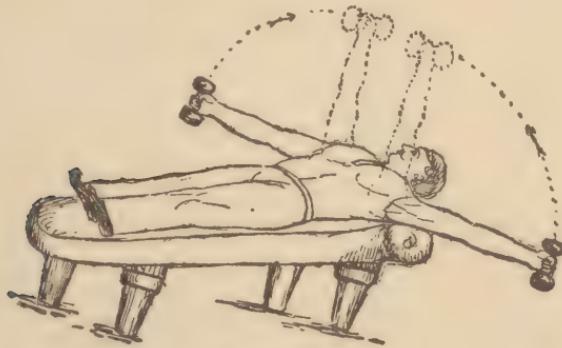


FIG. 17.

FORE-ARM MUSCLES WITH DUMB-BELLS.

The weight of dumb-bells in this exercise should be somewhat lighter to begin with than those used for the triceps, page 18, say two to four pounds, according to age and physical condition. To develop the muscles on the back of the fore-arm or that part running in line with back of the hand, the arms may be held at right angles, elbows in to the side, or extended, backs of hands upwards, then curl the backs of the hands upwards into the back of the wrists as far as possible, making no motion of the elbows until you feel the muscles

* The trapezium muscles of back are developed in this position, the same as the chest muscles when lying on your back performing a similar motion, raising and lowering the arms up and down.

well tested. This will develop the extensor muscles. Do either of these exercises the same number of times with each hand.



FIG. 18.

To develop the fore-arm muscles, or those muscles in line with the palm of the hand, curl the fingers into wrist as far as possible ; then with thumb and fingers upwards curl towards you as before. Figs. 18, 19, 20, 21, 22. All these motions will develop and widen the fore-arm. These exercises can also be taken with the arms partly extended, turning the hands in and bending the wrists only, and may be taken twice a day, or more if convenient, and the number of motions each way should be from sixteen to twenty, possibly more for robust persons. After a week's practice, however, the weight of

dumb-bells and number of times performed may be increased.

Twisting a stick an inch or more thick, or broom handle,



FIG. 19.

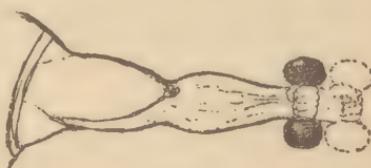


FIG. 20.

one way, while a second person tries to twist it another way, is very good fore-arm exercise ; or by twisting it in the oppo-

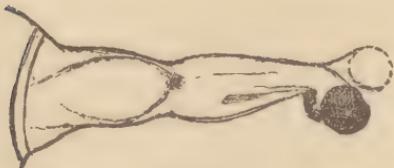


FIG. 21.



FIG. 22.

site directions yourself, grasping the stick with both hands, one hand with finger-nails up, the other with finger-nails down.

Rowing is good, also turning heavy weights up, running over a roller such as used in a gymnasium. For further fore-arm exercises see pulley-weight motions and cannon ball lifting.

PUSHING DUMB-BELLS.

The above term is generally applied to pushing a heavy dumb-bell above the head with one hand, that is, arm extended full length perpendicularly above the body. The bell can be lifted to the shoulder with two hands. To do this properly, the feet should be placed from twenty to thirty inches apart,



FIG. 23.

according to size of person. First grasp the bell firmly with the hand intended to push it above the head, with thumb over top of handle. Then with the other hand grasp the hand already holding the bell, outside thumbs of each hand crossing each other and around the handle. See Fig. 23.

Being now prepared to lift the bell, you make a good deal of effort to start it at first, pulling it toward the shoulder you intend to push it from, leaving it into the one hand, dropping the other arm to the side, and gradually lowering the body as you push the bell, till the fore-arm rests across the thigh as shown in Fig. 24. The best way to push the bell is outwards

and behind you, throwing the head well back, and keeping the eye always on the bell, and performing a spiral motion with bell as you push it, keeping the hand always directly over the elbow, as by lowering the hand towards the upper arm or shoulder it would have a tendency to shut the arm up, and you cannot bring your power to bear by so doing.

When the arm is at full extent the back of the hand

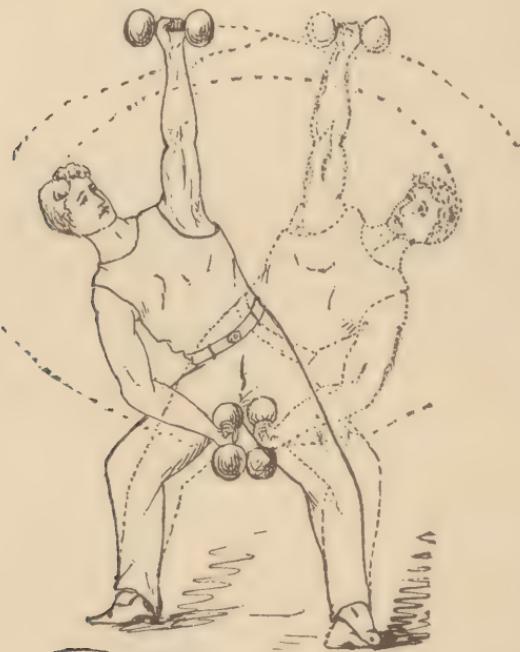


FIG. 24.

should be over the head, and if in the proper position when the bell is up it should be exactly over the opposite foot to the hand from which you are pushing when lifting bell.

The muscles of the arm and body used to perform this motion commence from the hands up the front of the arms, over the shoulder, down the spine and resisting muscles of the legs. When over the shoulder with bell in one hand they are from the hand down the outer part of the fore-arm, back part

of upper-arm to the shoulder, or whichever way the arm leans, the muscles on the opposite side are those taken, and are the pulling muscles. Thus when putting up the dumb-bell with the right hand, leaning body to the left, the pulling muscles are those on the right side, and the resisting muscles are those running obliquely through the trunk of the body from right shoulder to left hip, down to the foot, completely relaxing those of the right leg, which in this movement is merely used as a balance should the weight from any cause lean in that direction. Fig. 25.

Pushing heavy dumb-bells is termed by gymnasts "dumb development, or contracting exercise," binding the muscles together in a manner that might be termed "muscle bound." It prevents agility of the muscles to constantly use extremely heavy weights.

SLIM AND FAT PERSONS.

My theory is that slim persons in exercising should use moderately heavy weights and slow motions, and that stout persons should use light weights and quick motions in order to attain a normal condition.

The muscles of the arms being in almost constant use, they are naturally as strong in proportion as those of the legs; the latter have to be used to carry you to your breakfast, dinner, supper and other duties and business necessary for your health and to protect your interests and further your welfare; the former have to perform an equal amount of work by clutching and lifting whatever you move with them during the day.

To show what perfection the strength of the arm can be brought to, I will give a few instances. I have known a 100-pound bell to be curled more than once, viz., by standing with body erect, arm at full length down by the side, dumb-bell in hand. From this position curling the bell by raising the



FIG. 25.

hand until it comes in line with the shoulder, elbows in to the side, and not bending the body. In 1870 a gentleman named Pennock curled and pushed a 10-pound bell at the rate of thirty times a minute, over 8,000 times. This was done in a contest with a gentleman named Shack, both of Wall Street, the former being victorious.

Another man, named Pennell, pushed a bell 201 pounds 5 ounces, which I had made, and to which feat I was a witness; it had plates screwed on at either end to increase the weight, and can be seen, I believe, at the present day in John Wood's gymnasium, 6 East Twenty-eighth Street.

These feats were all the result of practice in developing certain sets of muscles and tendons, as given in previous exercises, and are spoken of to acquaint the reader with what has been, and what can be, accomplished by special development of any one muscle, or set of muscles. Continuous exercise of any one part of the body tends to excessive development of that part, while it is detrimental in a certain degree to the rest; the philosophy of which is that continuous motion on any one part draws thereto the largest amount of blood, a part of which is there detained to nourish and develop.

Well tested exercises thicken the periosteum, which is the covering of the bone; also the tendons which comprise the power of muscle. The veins carry the nutriment to the flesh, which is a bunch of blood cells, that, with fat and fiber, gives heat, supports and nourishes the tendons, nerves and periosteum; hence the bone and marrow.

The conclusion, therefore, from the above explanation, is that where a person is continually exercising any one part of the body he develops that more than the rest.

A large man, healthy born, proportionately made and developed, should perform any feats of strength or agility as well as the smaller man: I will mention several large men, who have performed feats of great strength and agility: Harry Beauniere, Wm. B. Curtis, Wash. Coster, Sullivan, Miller, the wrestler, Westhall of England, Pennock, Jordan, Gray, Ford, and the all-round athlete, Walter Ross: some of whom were the very strongest men in the world, besides being

good runners, rowers, jumpers, fencers and sparrings. The science of this can be easily explained. In lifting weights a man large and perfectly developed has a greater weight of body to counterbalance the leverage of weight. He lifts with more muscular force, and in whatever direction he moves he has more reach, consequently a greater stride to run. He may not be so agile in as small a space as the smaller man, for the smaller man has the shortest motion in the extension of his limbs; whereas, if he had the same distance of motion to make as the larger man he would be no quicker; and the heavier the man, the heavier weight he can handle (if in practice), as he has the weight to balance it. And, recollect, no man can or has pushed a dumb-bell over his head weighing but a few pounds more than his own weight, nor has any man held out more than 60 pounds (or a few pounds more than one-third his own weight) with arm in line with two shoulders and body nearly erect; although there are many who will tell you they have done so, and also write about it. But seeing is believing, and there is no record to show that 70 pounds has ever been held out in the manner herein described. I am fully convinced, as a practical man, that the leverage and impetus of weight is against the larger man as a general rule in feats of agility. Dick Pennell, Donald Denney, Mitchell, heavy weight thrower, and Samson have what I call dumb strength, as the heavy dray horse fit for nothing else, similar to Sandow, void of rapid action, no agility. All extreme heavy lifters must become this way.

For health and general development only, all parts of the body should be exercised equally, not to excess. For further records of extraordinary feats of dumb-bell lifting and pushing, see notes in Appendix, by William B. Curtis, the editor of *Outing Record*.

EXERCISES FOR THE FINGERS AND GRIP.

These exercises were, when first designed, specially intended for piano players and others who desired to have good command over and power in their fingers. They will be found of great benefit to the numerous class whom necessity, duty, or pleasure compels to use type-writing machines.



FIG. 26.

1st Exercise. Procure a 12 or 16 pound cannon ball and attempt to pick it up by the strength of the fingers only.

Hold the palm of the hand over the upper part of the cannon ball. Do not allow the ends of the fingers to get under the centre of the ball. Fig. 26. This weight may be increased to two knobs on a handle, like a dumb-bell, 20 lbs. or more in each knob, which is about the limit.

2d Exercise. By catching a heavy bean bag or any similar article where the grip can be made with the ends of the fingers.

3d Exercise. Pushing your body up from the floor by the strength of the fingers only. Fig. 27.



FIG. 27.

4th Exercise. Leaning against a door or wall and pushing your body away from it by the strength of the fingers. Fig. 28. See Judd's new finger-lifting machine.

Striking out or downwards with dumb-bells in hand is good. Experience has taught the author that more benefit is to be



FIG. 28.



FIG. 28a.

derived from the above exercises than from any others usually taught for the purpose in gymsnasiums.

CHEST MUSCLES.

In the use of dumb-bells for the development of the chest muscles you must lie on your back, on a stool, settee or floor (see Fig. 29), as in standing they cannot be put to a direct

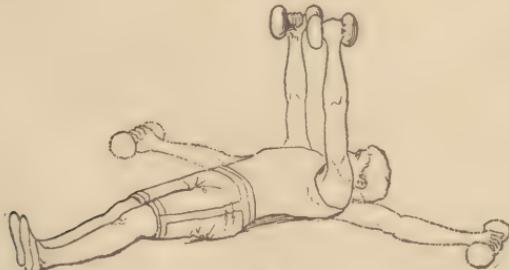


FIG. 29.

tension with them. The only way I can think of that these muscles can be moderately exercised when standing on your feet, is by raising the arms above the head, leaning well back

and lowering the arms downwards and backwards, raising them up again, and so on, continuing about 8 to 10 times for a beginner (see Fig. 28a) would be sufficient with 3 to 4 lb. dumb-bells, holding your breath when performing the motion.

When standing upright and holding bell out to full extent of arms, and passing them backwards and forwards, the deltoid, or muscle on top of the shoulder, is the muscle holding them up; and the chest and muscles of the back between the shoulders only act as a rope pulling a derrick on one side, which a boy could do, even if the derrick was holding up a ten-ton stone. So you will see by this that the chest muscles are only slightly brought into play when bringing them forward.

The chest, however, can be developed when standing on your feet, by the use of the pulley-weights and chest-bars. Figs. 1, 85, 87, 98 and 99.

1st Exercise is the most direct and best chest or pectoral muscle exercise.

Lying on your back, dumb-bells in hands, arms extended upwards to their full length above the chest, finger-nails opposite each other.

From this position lower the arms steadily in line with the

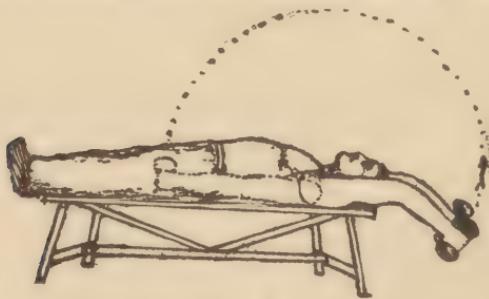


FIG. 30.

shoulders until the backs of the hands touch the floor, raising them again. Thus continue, say from 10 to 15 times. Fig. 29. A direct action on the back muscles leading to the back arms is exercised in the same way by reversing yourself, face downwards.

2d Exercise. Position same as in first exercise on floor,

Lower the arms from above the head behind you to the floor, finger-nails facing, knobs of bells perpendicular; raising them again and repeating several times. See Fig. 30.

3d Exercise. Position same as in previous exercises on settee or stool. Lower arms first behind the head, and then



FIG. 31.

bring them back and lower them close to the hips, keeping the bells perpendicular, and arms out to full extent. Fig. 30.

Recollect that in all these exercises, when a person is testing himself to any extent, it is proper that he should hold his breath. This latter exercise, however, must not be considered as a special chest exercise, as it develops principally the muscles of the arms and shoulders.

4th Exercise. Position as before, arms straight above the chest. Then let one arm forward and one back, allowing the dumb-bells to pass close together when passing over the chest. Fig. 31.

5th Exercise. This motion or movement I term the wing motion and consider it a very fine one. The position is the same as in previous exercises. Arms extended at full length, backs of hands resting on the floor. Lifting the arms about one inch from the floor, carry them around behind the head, finger-nails up. Touch bells when above the crown of the head. Then bring arms forward until the bells touch the hips. In this exercise the chest muscles are put to their greatest test. Fig. 32.

6th Exercise. Position as before, moving arms around describing a circle with each hand around chest; arms crossing when over chest. Do this six times; first one way, then

reverse. In performing this exercise the muscles of the arms, shoulders, biceps, dorsal and chest are well taken and exercised. Fig. 33.

7th Exercise. Position as heretofore. Legs together or

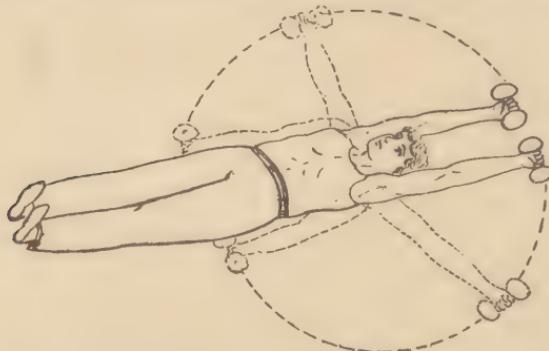


FIG. 32.

apart; arms straight above the chest. Let the left one down to full extent in line with the shoulder to floor, the right hand following till it touches the biceps of the left arm. Then reverse the motion, lowering the right arm, and letting the



FIG. 33.

left hand touch the biceps of the right arm, or both together. See Fig. 34.

It is proper to call attention at this time to the fact that many professionals and amateurs, who have for years exer-

cised at gymnastics, dumb-bells, etc., are laboring under great misapprehensions as to the proper mode of developing the different muscles of the body. In fact, the only muscles (the proper process of development of which is generally known) are the biceps, or front part of upper arm and calf. The reason of this, it is fair to presume, is that those muscles being in such constant use, the development is watched the most closely.

The exercises for the chest muscles with dumb-bells can be performed on a stool or settee without a back, with much better results, as the opportunity is thereby afforded to permit the arms and hands to go below the trunk of the body, which causes much more extension of the muscles, and greater test and contraction to bring them back. Consequently, if one has



FIG. 34.

this facility for exercising, it is better that dumb-bells of less weight should be used, and more caution displayed in this position, as it is easy to strain the muscles by lowering the arms too much, or too rapidly, or with a jerking motion.

Note.—Remember that developing the muscles does not develop the lungs. It only aids to enlarge the walls so as to give more room for expansion.

REMARKS ON CHEST MUSCLES.

Bringing the arms across the chest with dumb-bell in hand when standing up to develop these muscles, as stated in other works, is wrong. The muscles are not brought into action, except by sympathy. It is a similar motion to biceps

development. Raising the bell to shoulder, in which the hand, fore-arm, biceps and deltoid muscles are doing almost all the work, connecting pectoral muscle but little.

Many may believe that the chest muscles are exercised in this way, but it is not so; only by self-contraction. It is a position that shows out these muscles more to the amateur



FIG. 35.

than any other. Even a fat man with moderate development could bring his arms across his body in this manner (see Fig. 35), and appear in a photograph to have considerable muscular development, when he is really deficient in the same. Most young men that have any pretensions to development, if they have their picture taken, have it in this way, to show up

these muscles, stripped to the waist. The reasons for this are:

First.—You can control these muscles better than any others.

Second.—They are large.

Third.—They include the head—which must be on to show the *great* young man's development—with the face on.

Fourth.—With or without holding dumb-bell in hand and crossing the wrists in front of chest, as in Fig. 35, and you contract the biceps, which if moderately developed are pressed well up against the chest muscles. This, with the biceps and chest muscles being self-contracted, make the muscles stand out for showing yourself off, as in cut mentioned.

See cuts of dumb-bell exercise where the chest muscles are well tested, when arms are out to full extent, Figs. 29, 32, 33, 34, also Fig. 85, where they are at their greatest test on pulley-weights. You will find in both exercises the pressure on chest similar. In one the pressure is downwards, as there is no other direct way to put these muscles to a full test with dumb-bells.

CHEST MUSCLES ON PULLEY-WEIGHTS.

With pulley-weights you stand up with back toward the machine with handles in hand, backs of the hands behind you, one foot advanced. You pull outwards and forwards, keeping your arms the height of your shoulders, and let them back. When so doing resist with the body, pressing it well forward ; chest out, head well up, not allowing the weight to pull you back when letting back ; and so on continue about twenty times or so, according to strength. As you have a number of other exercises to perform, let this be about the twentieth part of the exercise, though the mind should not be troubled while exercising by precise counting. Figs. 79a and 85.

A number of exercises should be laid down and accomplished more or less, according to feeling.

The chest muscles can also be brought into play with pulley-weights, by pulling inwards and towards the body,

with arms bent; when facing machine. See Figs. 86, 87, 88 and 89.

THE DORSAL MUSCLE AND ITS DUTIES.

The dorsal muscle helps you to pull anything downwards, sidewise, or sidewise from over the head, or helps hold the



FIG. 36.

body up when hanging on a horizontal or trapeze bar; or to suspend a weight in the hand when over the head, leaning to the opposite side, Fig. 37, or when lying on the floor with the arm over the head and weights in hand, Fig. 36, or Fig. 38 in pulley-weight exercise, or in holding the body up when suspended



FIG. 37.

between two rings (see Fig. 39), which is termed by gymnasts a lacrosse, a term likely taken from the French, and a feat of strength not one in a million would be likely to perform ; or in pushing a weight from you sidewise or forward, or in holding the body up in either of the two positions shown in Figs. 27, 28.

1st Exercise. These muscles can be developed with dumb-bells by lying on your side, then raising your arms upwards and over the head as far as possible, having the little fingers upwards. See Fig. 36.

2d Exercise. With dumb-bells in hand, from an erect position lean well to the left, then pass the right hand over the head to the left, with the little finger up, bringing the hand back again, and repeat the motion with the left hand, changing to the other side, say twelve times with each hand. See Fig. 37.

3d Exercise. Pulling with either hand on pulley-weights,



FIG. 38.



FIG. 39.

at full arm's length from over the head sidewise; pulling with the left when leaning to the right, and with the right when leaning to the left. Fig. 38.

4th Exercise. Pushing from the wall when standing a good distance from it; also pushing from floor. See Figs. 27, 28.

These muscles are developed greatly by trapeze, rings and horizontal bar exercises, as shown by the following: Messrs. Leotard and Pfau, who were the greatest experts on the flying trapeze in the world, were specimens of extraordi-

nary development of the dorsal muscles. I have seen them stripped and exhibiting these muscles in a position, viz.:

Head and shoulders forward, arms bent, elbows well out, hands toward side. In these cases development was so great that these muscles stood out behind the chest probably three or four inches.

An expert swimmer also develops these muscles wonderfully by the side motion.

TRAPEZIUM MUSCLES.

These muscles are developed by raising bells when lying face downwards on stool, in a position reverse to that shown in Fig. 17, or as in triceps development, with arms fully extended in line with the shoulders, body well forward, stepping out with either foot, similar to Fig. 15.

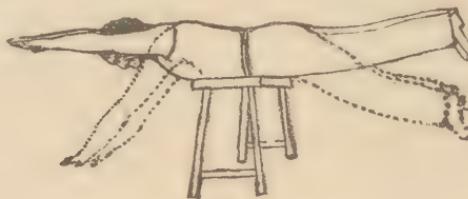


FIG. 40.

For other development of these muscles see pulley-weights and extension motions on stool. Figs. 40, 42, 44, 45, 91 and 92.

SPINAL MUSCLES.

In these exercises use heavier dumb-bells. A very robust person may use two dumb-bells weighing from fifteen to thirty pounds. An ordinary male adult one from fifteen to thirty pounds, or two from eight to fifteen pounds each. The spinal muscles are developed by motions similar to those employed in lifting weights from the ground.

1st Exercise. Swing dumb-bell under the legs, thence up, extending arms to full length above the head, or merely bring dumb-bells over the shoulder. Fig. 41.

This exercise may also be done with one moderately heavy

dumb-bell, swinging it first under the legs with right hand, then bringing it up, changing bell from right to left hand in line with shoulder, and *vice versa*.



FIG. 41.

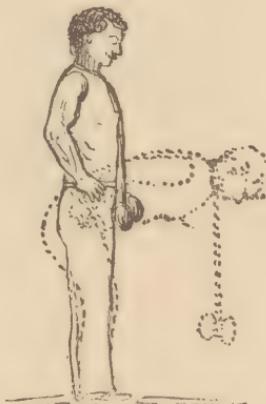


FIG. 42.

2d Exercise. Suspending a dumb-bell from the back of the neck by the aid of a strap of sufficient length to permit the dumb-bell to come in line with abdomen when standing erect. From this position bend body forward as in previous exercises. Then raise and lower the body, the spinal muscle being at greatest tension when the position of the body is at right angles. Fig. 42. The object of the above exercise is to rest the arms.

3d Exercise. Then perform the above exercise without dumb-bells, bending the body and head well forward and back, without bending legs; hands on hips. Fig. 43. Do this 12 or 14 times.

4th Exercise. Without dumb-bells.

The body should lie face downwards across a stool at height



FIG. 43.

of 2 feet 8 inches or more. After balancing the body, raise and lower the legs and body. Fig. 40.

This exercise causes central contraction, and serves to develop the muscles at the back of the body, from the sole of

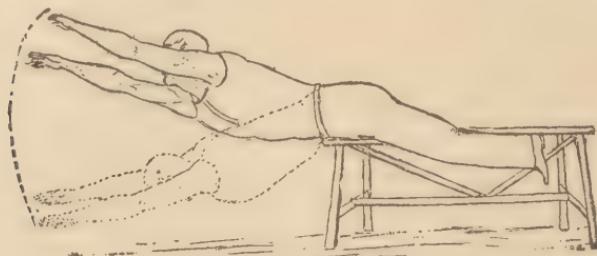


FIG. 44.

the foot to the ends of the fingers, trapezium included, providing the toes and fingers are extended as far as possible from you.

5th Exercise. Without dumb-bells.

Suspend the body or legs on an elevated stool; then lower and raise them 8 to 10 times. As you grow stronger the number of times may be increased. The latter exercise develops the hamstring muscles especially. Figs. 44 and 45.

HAMSTRING MUSCLES.

I believe motions in raising or lowering the legs will prove the most effective for developing the hamstring muscles, or the



FIG. 45.

muscles running from the pelvis under those you sit upon. They are a connecting link to those muscles used for raising and lowering the trunk of the body, that is, the trapezium

muscles, and, unless lifting a very heavy weight with the hands, are not brought into play sufficiently for proper development. They are effectively exercised by attaching a pulley by a strap to the ankle, then facing the machine and pulling backward and keeping the leg straight, as in Fig. 46, except that the position of the body is reversed.

A man can sit on the floor, legs together or apart, and raise and lower his body with very little use of these muscles, if he be slim.

SCHOOL AND COLLEGE STUDENTS.

In passing a few remarks on the increase of weight and measurement, after a course of gymnastics, by school and college students under 18 years of age, I must say that, as a general rule, they will increase in weight and size whether they exercise or not. Consequently the measurement of the body and general shape on commencing and ending the term is necessary to show the improvement. Making the weak parts strong, and bringing the body up to an even development should be the special object, and shows the benefit gained by exercise. It requires more science in the art to develop persons after 18 or 20 years of age than it does before that age; or to take a one-sided and unevenly shaped person, young or old, and make him walk erectly and his limbs measure alike.

The above remark is meant for college professors, who gain so much credit for the development of college boys.



FIG. 46.

ABDOMINAL MUSCLES.

Commonly called Stomach Muscles.

1st Exercise. With or without dumb-bells, standing.

Raise arms above the head to their full extent, leaning body



FIG. 47.

and head back as far as possible, looking upwards. Then come forward and repeat several times. This exercise brings in the chest muscles also, and is a good exercise for extending the front muscles of the body upwards, and abdominal muscles when leaning back. Fig. 47.

2d Exercise. Body lying on floor; arms extended above head in line with body; bells in hand; then bring the body to a sitting position, trying to touch toes with bells, at same time keeping legs straight. Do this exercise several times. This can be performed

without bells, trying to touch toes with fingers. Fig. 48.

This takes chest and abdominal muscles when coming up, and spinal and upper part of arm when trying to touch the toes.

3d Exercise. Body lying on floor or stool; raise the legs



FIG. 48.

to a position at right angles with the body, letting them down slowly. Point the toes from you during this exercise. Fig. 49.

4th Exercise. Central contraction. Lie on the floor on your back, and raise body and legs at same time, so that you

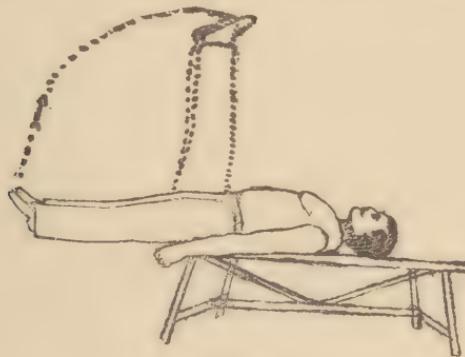


FIG. 49.

are only resting on your buttocks, keeping legs straight, eyes on your toes. To do this easily at first, the flat of the hand should press against the floor. Do this about six times. Fig. 50.

Central contraction.
Abdominal exercise on stool. Lie across stool and



FIG. 50.

raise and lower body and legs, raising head to look at toes when up. Do this two or three times. Fig. 51.

5th Exercise. Lying on floor on your back, perform a rotary motion with the legs, keeping them perfectly straight, moving them round first to the right, then to the left; press palms of hands on the floor to steady and aid you. Do this from four to six times each way. This will be found a rather hard exercise. Fig. 52.

Several of the above exercises can be performed to good advantage on a stool instead of the floor. Beginners should be cautious in these exercises, as they are apt to become sore



FIG. 51.

should they exercise these muscles too much, but remember that exercise which brings on soreness will also take it away, though it should be done very mildly.

LOIN MUSCLES.

The muscles of the loin and hip are developed by lowering

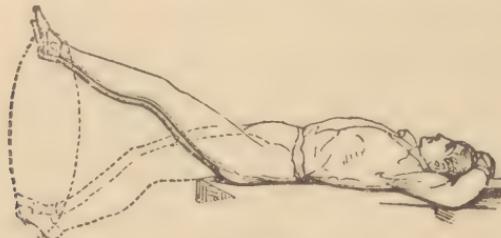


FIG. 52.

the body from the loins either to the right or to the left from an erect position, with or without dumb-bells.

After exercising for ten days, increase the number of mo-

tions and amount of weight. For male adults of ordinary strength, bells varying from 6 to 10 lbs. may be used. Strong persons, of course, can use heavier.

In the first exercise with bells it should be as follows: Body erect, bells in hands; feet from 12 to 14 inches apart; then lean over to the right, and then to the left, and so on, ten times, with or without bells. Fig. 53.

2d Exercise. From an erect position, bells in hands, feet from 12 to 14 inches apart, turn the body round, first to right,

then to left, as far as you can (do not move the feet any more than necessary). When turning to right bend the right knee,

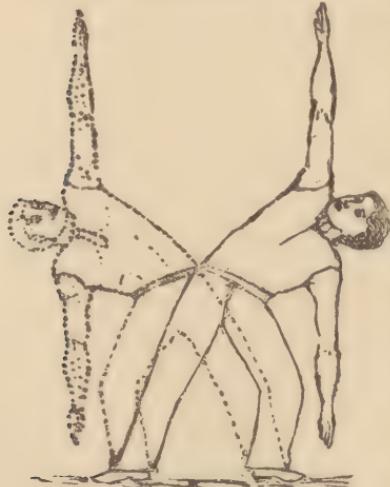


FIG. 53.

throwing the right hand behind you, turning the head, and looking well around you, and *vice versa*. This exercise brings in the spinal muscles also. Do this eight times each way.

Figs. 37 and 55.

3d Exercise. Hold dumb-bells on shoulders, leaning well to right, then to left; then with arms down to full extent perform same motions. Fig. 54.

4th Exercise. In pushing dumb-bells up you should lean well over to the opposite side from that hand with which you push the bell. It is more effective to the loins if done without elbow on thigh. Figs. 24 and 25.

POSTERIOR, OR LUMBAR REGION, AND BACK LEG MUSCLES.

Posterior muscles are those muscles upon which you sit. They commence from the hip bone, running round backward down the spinal column to the crupper bone, thence down and around to the outside of the thigh, up to the hip bone again.



FIG. 54.

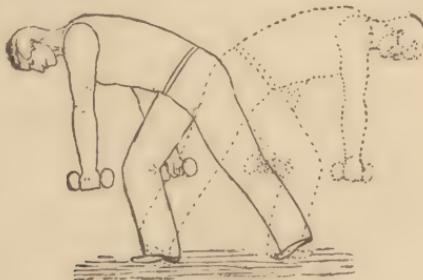


FIG. 55.

These muscles are intercepted by those of the back, thigh, biceps and hamstring, which are the main muscles of that region, and run down to the bend of the knee. These muscles

can be developed from a standing position as well as by lying down on stools.

1st Exercise. Attach a dumb-bell by aid of a strap or towel around the heel or ankle, permitting the bell to hang down on the sole of the foot. Then lift the leg up behind you as straight as possible, keeping the body erect. During the exercise you can steady yourself with a chair. Fig. 56.



FIG. 56.

2d Exercise. Another way is to lie face downward on a stool, legs suspended, raising legs upwards, and lowering them again continuously from 10 to 20 times. Fig. 45.

3d Exercise. From upright position, legs perfectly rigid, hands on the hips, fore-fingers in front of you, thumbs to rear, as in Fig. 72. Then perform continuous jumping motion on fore part of feet from 20 to 30 times. This

will develop the calf of the leg, and all motions of lifting legs straight behind you. Skipping also is good. Fig. 73.

An illustration of the abnormal development of these particular muscles by similar movements is exhibited by bare-back riders in a circus.

BACK THIGH.

The same motions which develop the lumbar regions are used for the back part of the thigh, included with others, viz.: Fasten a strap around the ankle and attach it to dumb-bell, then raise the leg with bell straight behind you, bringing heel of foot in towards your thigh (similar to Fig. 56).

Stand at the foot of a settee, steady yourself by a chair, and lift the end of the settee on the heel of your foot, say 5 or 6 times at first. After a week increase the number of times.

By bringing the foot in to the thigh, it acts the same as curling a bell, that is, with bell in hand, bringing it into the shoulder.

This develops front of upper arm, or biceps thereof, as by the same motion with leg, bringing the foot in to back thigh, you develop the biceps of the leg, which are at the back of the thigh. Pulley-weights also are one of the best devices for this

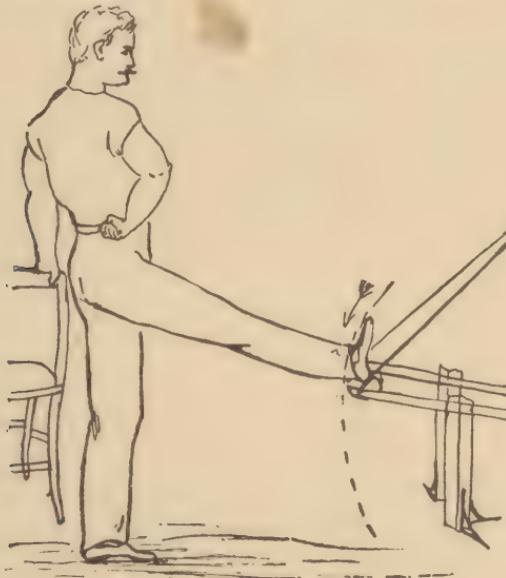


FIG. 57.

purpose. See pulley-weight exercises and the author's new device for the development of the leg muscles.

FRONT PART OF THIGH.

The front muscles of the leg up to the groin are developed in a similar manner, viz., when standing, by lifting the bell in front of you, keeping the leg as straight as possible. The bell can also be used in a similar manner to nursing a baby on your foot when sitting on a chair. Fig. 58.

OUTER MUSCLES OF LEG.

For the outer muscles of the leg lift the bell sideways, by fastening to a strap similar to Fig. 58. Also see pulley-weight exercises for these muscles, and new machine.

Lie on a stool on your side, legs suspended; then raise upper leg as high as possible a number of times; then reversing position, do same movement with other leg. This may be done at a running pace. See Fig. 71 and pulley-weight exercise for these muscles.

When it is the desire to specially develop the muscles of the leg only, sit on the edge of a stool, and only exercise the one specially intended for development. This is necessary where a leg has been injured, or diminished by pressure or non-usage.

INNER MUSCLES OF LEG.

Either of the following motions develops the inner part of the leg, as well as

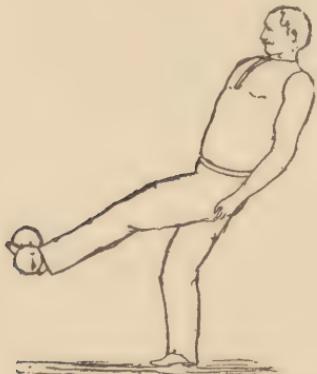


FIG. 58.

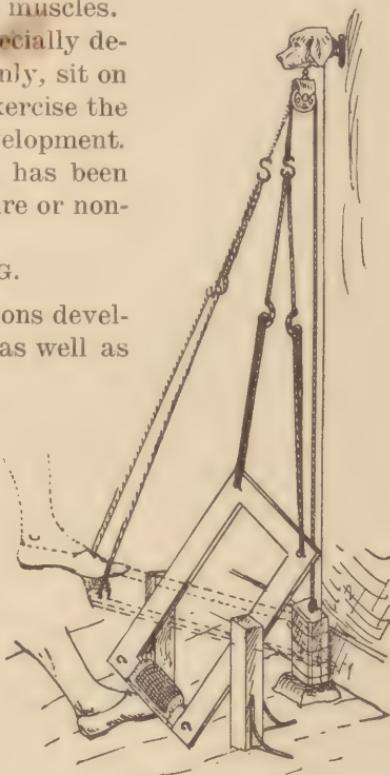


FIG. 59.

those muscles extending up to the groin. There are no better exercises than the following for these muscles.

The muscles of the inner leg lie almost dormant, and but few people give them any special attention. Even professionals, who are continually devoting their time to the development of the different muscles of the body, wholly neglect or ignore these important muscles. When visiting gymsnasiums, either

public or private, you seldom see any special exercises given for them.

First.—To develop the inner muscles of the leg, dumb-bells must be dispensed with. A very good exercise to develop these muscles is, to stand erect, feet apart about 12 inches, more or less, and then draw the legs together. This should not be done too frequently. Fig. 60.

Second.—An easier and more pleasant way to develop these inner muscles is by the aid of pulley-weights. See pulley-weight exercises for these muscles.

A very good exercise is that called the movement cure. In this it is necessary to have assistance.

Third.—Lying on your back, either on stool or floor, legs apart, your assistant presses on the inner part of legs, while you try to bring them together. The assistant should not press too hard, or be too severe when practicing these movements at first. Fig. 61.

Fourth.—Another way is sitting on a chair, and opening the legs. When pressure is put outwards on the inside of them

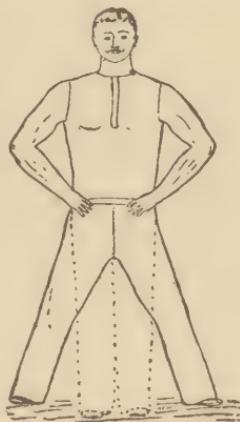


FIG. 60.



FIG. 61.

while you are trying to hold them from being pressed outwards, the inner muscles are developed.

Horseback riders have great strength in the thigh muscles. A great trick with expert riders who know the power of these muscles which they develop is as follows: Two persons sit

opposite each other on the edges of chairs, one placing his knees between the other's legs, the one with legs inside trying to force the other's legs outwards, which is good for outer muscles of thigh, while the one with legs outside tries to keep

the other's closed, which is good for inner muscles of thigh.
Fig. 62.

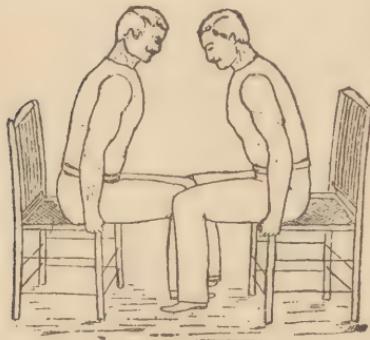


FIG. 62.

MUSCLES OF CALF OF LEG— WITHOUT DUMB-BELLS.

1st Exercise. This is a very simple exercise for the calf of the leg. Standing on one leg, on the fore part of foot, raise the other leg as far behind you as possible without bending

the knee, pointing the toe from you, pinching the toes in, and trying to contract the calf; looking backwards at foot; then alternate with the other foot. Fig. 56.

2d Exercise. This exercise widens the calf.

Raising the body on fore part of feet—they being about 12 inches apart—roll body from right to left without moving feet from ground. Continue the movement from 30 to 40 times, or more as strength increases.

3d Exercise. Simply raising body on fore part of feet, then lowering. Do this 50 times twice a day, more or less.

4th Exercise. Running and walking on fore part of feet, keeping on toes as much as possible, with legs straight.

SHIN.

1st Exercise. Raising fore part of feet off ground as high as possible, so that the weight of the body rests on the heels only. Make a good pause before lowering. Continue this about 25 or 50 times, steadyng yourself by holding back of chair.

2d Exercise. Pulling or lifting weight upwards in front of you by the aid of your toes, curling toes into the shin as near as possible. Fig. 59, under Motion.

3d Exercise. Fast walking adds to development of shin, when raising the toe well and pitching on heel of forward foot Fig. 63.

ANKLE.

First.—Any motion of the foot will of course develop the ankle, but the motions mentioned below we seldom do, consequently they are good ; that is, on flat of foot going from right to left, and *vice versa* on the sides of the feet. This specially develops the outer and inner tendons of ankle, as in calf exercise.

Second.—The ankle and shin may be developed by a pendulum suspended by a stiff iron rod to two foot pieces attached to an axle, which causes the motion to be only forward and back. The pendulum should be from eighteen to twenty inches long. At the end is an iron ball, made with a thumbscrew running through end to grip the bar, that the ball may be changed up and down so as to regulate the leverage of the weight.

Another good movement, similar, is standing on two foot-pieces working on the axle, placed about four inches from the floor, raising and lowering yourself.

Raising on fore part of feet, as in calf exercise, develops the sole of foot ; also nearly all exercises for calf and shin assist in developing muscles of the ankle.

SUSPENSION OF BODY BY HANDS AND FEET.

A good exercise for a person not too old, and very beneficial to the younger class of mankind, giving exercise to nearly all the muscles of the body at the same time, is that which is given by suspending the entire body by the hands and feet with the aid of a machine which I term an “Extensor,” which is manufactured exclusively by the author. Figs. 64 and 65.

The exercise consists of pulling and pushing from the hand



FIG. 63.

and foot out backwards or forwards, raising and lowering the body, back or face downwards as desired. Weights or springs

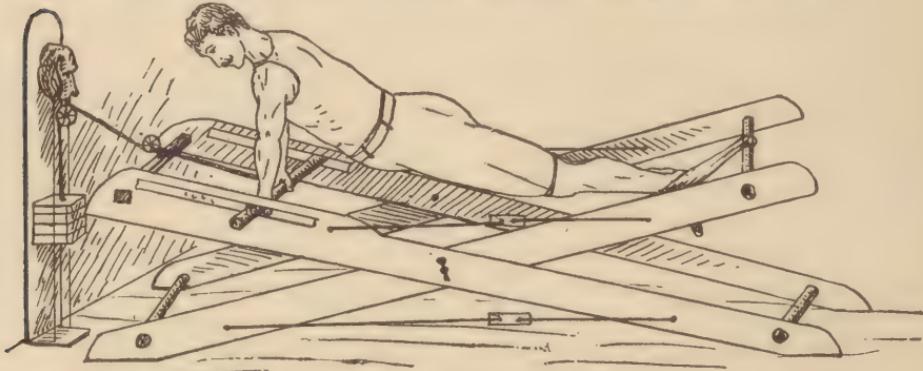


FIG. 64.

may be used for resisting and pulling pressure weights by ropes running over pulley wheels on uprights elevated at the proper height on either side of the cross-bars, or one pulley attached in center.

Many men may hereafter claim the invention of this extensor machine for the above exercise, also pulley-weights with

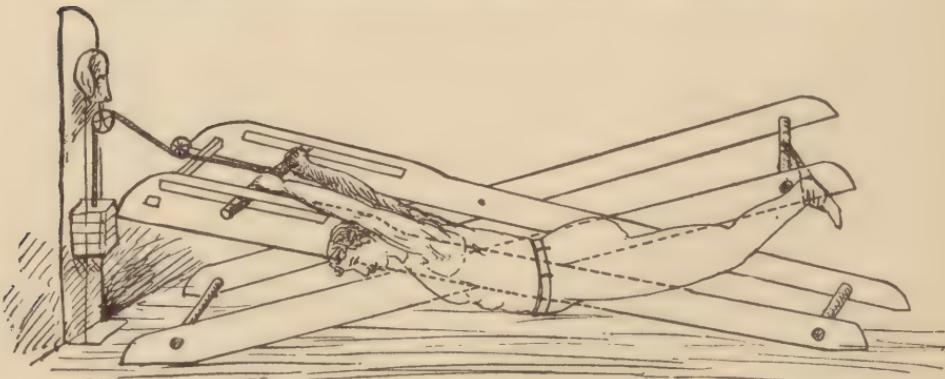


FIG. 65.

guides, for the house gymnasium, and many other similar apparatus and implements to benefit the development of the body; but I am confident they were never put into practice

until I made them. The same applies to my large indoor throwing ball, loaded indoor 12, 16 and 21-pound shots, 56-pound weights, loaded dumb-bells, and my lever diaphragm developer; also my pectoral, deltoid and trapezium muscle developer, one or two-handed; also the only true grip exercising machine, lifting by fingers only, and loaded quoits; nor do I believe the table of a man's weight in condition, which has been copied so much, was ever printed until published by myself. See pages 9, 10, 11 and 12.

The benefits of the extensor machine are extension and contracting motions of almost all the muscles of the body at one time, and cannot be spoken too highly of, especially for young people and those with contracted limbs, spine curvature, or round shoulders, or for even general development, although it is rather a severe exercise.

GENERAL DEVELOPMENT.

The exercises under this head are intended for business men and all who in their daily avocations only use certain sets of muscles, while the remainder are left weak and feeble for want of exercise. To preserve good health, and have the body, limbs and muscles perform their several functions when called upon, it is as necessary that they be exercised, cleaned and fed as it is for an engine to be cleaned and fed with oil and fuel before it will perform its proper motion.

CONSTIPATION.

Many business people are afflicted with constipation to such an extent as to disqualify them for business, the ailment often endangering even their life. An old maxim says, an ounce of prevention is worth more than a pound of cure. In many of these exercises suggested by us the movements, especially all those where you bend the body from its erect position, will either compress or knead the intestines, and thus help the foreign mucus collected there to be expelled by either purging or expectoration, or through the pores.

These movements also have a tendency to cleanse the

head, lungs and stomach of mucus. But should a person have decayed teeth he should, before beginning exercise, go to a dentist and have his teeth attended to, as it is extremely injurious to the general health to breathe into the lungs the very bad odors arising from decayed teeth. Many persons are misled by being informed that their general indisposition arises from the stomach, when in reality it is from their teeth.

REMARKS ON ROOM EXERCISE.

All motions where the trunk of the body is bent forward or back, or to the right and left, will start the blood moving through the vital parts more quickly than leg or arm exercise. The body, lying somewhat dormant through the night, requires some such light exercise, as it extends the tendons of the trunk and limbs, kneads the entrails, etc., starting and regulating the system for its motions through the day, causing warmth, which is life, and without which we cannot live, by forcing the blood from the trunk to the extremities; even though you only rub the legs well with a damp, coarse towel in the morning, which is also a good bending motion, if you do not wish to perform other exercise. See page 86 for simple morning exercise.

The times for exercise, an experienced person knows, should be before meals, or half an hour or more before retiring, in order to give the nerves and blood time to resettle.

A person should never feel the muscles ache after exercise, nor exercise severely without the knowledge of what muscles are being exercised; they may believe that their abdominal muscles are being exercised, when it is those of their back.

THE CULTURE OF MUSCULAR POWER.

In order that the muscles attain the development, power and perfection intended by nature, it is necessary to observe certain rules and methods of action. These require some determination to carry out intelligently and without waste of power, the end in view. Without such guide the exercise is but a groping in the dark. Some persons lack development in certain particular parts of the body, and, in order to

strengthen those parts, the following categorical directions will be found useful.

TO REDUCE WEIGHT OF FAT PERSONS.

There is but little doubt that persons short or fat would be more healthy if they did not allow the fat to accumulate. They are too lazy to reduce it by sufficient action of the body. They partake of sloppy food, such as soup, gravy, sauce, cream, milk, pastry, soft vegetables, fat meat, sugar, and lots of seasoning, which causes them to drink much water. It is water taken while eating, intermixing with the food, that accumulates fat and makes them unhealthy, liable to heart disease, apoplexy, kidney trouble and many other dangerous diseases.

To reduce a fat person in a healthy way, he should perform rapid motions and use light weights, or none, as it is easy to rupture him by using heavy weights; he should continue for half an hour at least, if possible, without making himself sore, and if very fat his exercise should be performed while lying or sitting on the floor or on a stool. It is the only known method by which to reduce weight while retaining or increasing strength, lung power and agility. How does the athlete or race-horse train down and increase his lung power, strength and agility? Only by doing just the reverse of what would be done to increase weight.

Stout persons who dine in the evening should be careful not to eat and drink too much and then lie down and sleep.

Corpulent persons should try to do without drinking until the latter part of their meal, and should then drink as little liquid of any kind as possible.

Plenty of fruit and acidulous drinks should be partaken of and the stomach be mildly purged. See remarks on diet, p. 162.

TO INCREASE WEIGHT OF SLIM PERSONS.

Let them commence by using medium weights and avoiding rapid motions, and as they become stronger, let them increase the weight with less motion, less brain work, and plenty

of luxuries—wine, pepper, salt, and ice-water in moderation. As they grow stouter, cream, milk, sugar, soup, eggs, potatoes, oil with salads, plenty of gravy, and beer or porter before retiring—just what fat persons should not do. With regard to the above theory, I shall refer to Dr. Austin Flint, who will bear me out on this subject, and who is one of the best authorities in this city, as he is a man who has practiced a good deal, and has mingled and conversed with men of wide experience, and practically knows how great strength is obtained.

If a business man takes ten to twenty minutes exercise twice a day indoors, and one hour outdoors continually, and well ventilates his sleeping-room, he will do well, and is more likely to continue than if advised to take two hours per day indoors and more out. I have found few business men, in thirty years' experience, who would devote more than fifteen minutes exercise twice a day indoors, and double that amount outdoors, day in and day out. In order to derive much benefit we should act as we occasionally did in the best playful mood of our youthful days.

LUNGS—REMARKS ON.

The lungs are seldom if ever paid attention to or developed. This is an established fact, and it is necessary to call attention to their importance and to suggest the simplest means necessary for their treatment.

The lungs, it is well known, are composed of innumerable minute cells designed to receive and retain air. In exercising, if the breath is properly taken, these are well-filled. All rapid movements of the body increase the action of the lungs, and, therefore, by inflating them properly we develop them. This is not effected by panting like a fat dog, and thereby only filling them to one-third their capacity at each breath, but by taking in sufficient breath each time to entirely fill them. By doing this we inflate and expand the most minute air cells which otherwise would receive little, if any, inflation whatever.

If, on the other hand, the partial inflation referred to is continued for years, the nerve fiber and sinews by means of which the lungs contract or expand, become chronically inactive from

want of use. The full inflation of the lungs is the first necessity to the enjoyment of perfect health and strength.

The ordinary routine of business men does not afford in itself the opportunity for a proper degree of exercise necessary to inflate the lungs properly. This is especially the case in sedentary occupations.

This shows the necessity of aiding the development of the lungs to their full capacity. The first and simplest method is the regulation of breathing.

BREATHING AND LUNG EXERCISE.

The best time to do so is when you are in the easiest position. You may perform two or three motions without breathing. Then, through the nostrils is the place to inhale or expel the breath, as this is what they were given you for, especially when exercising. This should be done when indoors, though you may expel the breath through the mouth occasionally. But to develop the nostrils well for this purpose, and to avoid catarrh, we should adhere to the above directions, especially for the short space of time we allot for this purpose. The mouth is intended to breathe through when talking, or as a second passage to the lungs, that is, when we cannot breathe through the nose. The development of the lungs is a *specialty in itself*, and the system laid down, as every scientist knows, is first to have a place adapted to the purpose, free from dust, and so that it can be regulated to the temperature; then, according to the strength of the lungs on commencing, the pupil should ascertain from some good authority how much to exercise them. First, he should place his hands just above the hip bone, thumbs to the rear, and fingers to the front, body erect, feet eight or ten inches apart, or under the outer part of the shoulders. Now we are ready.

We first expel the breath. To do so we lean a little forward; the object of this is to let in the abdominal muscles and force up the intestines and diaphragm, and press upwards the lungs to aid them in expelling the breath. Then you should inhale, raising the body upwards and slightly backwards, head well raised, and try to expand the sides and chest

as much as possible, raising the arms off the sides, so that the sides will not be compressed by the weight of them. Fig. 43.

This should be done thirty to forty times at first, and the air taken through the nostrils if possible. Should you breathe too freely through both nostrils, breathe first through one, then through the other, while you hold one with the finger—an equal number of times through each. After you are through, rub the chest well all over with a coarse towel. Then slap the chest all over, and blow through the nostrils well, in order to clear them of dust, if any.

Inflate the lungs in the same way, then slap the chest all over, if the lungs are strong enough to bear it.

If doing this indoors, open your door and windows, the top of one and the bottom of another, standing at the one open at the top. Don't make your room too cold. The best temperature is about sixty degrees. This also applies to the temperature and manner of opening windows in sleeping rooms.

I believe the best of all exercises, for lungs not diseased, is to take a full breath through both nostrils, as stated in first position; then to blow in a lung-tester, so that the eyes may see what the lungs expel. This is a coaxter, and makes you blow harder, and likely more correctly. If you do not wish to get a lung-tester, which I believe would benefit many a family, and avoid consumption, heart disease and many other troubles, procure a rubber water bag, or bladder, so that you can see how much you can expel at one breath and at the same time have some resistance, being careful to remove the mouth from the neck of bladder at each inflation. Having thus practiced until you can breathe by long inspirations and with full inflation of the lungs, without pain or extraordinary effort, and other exercises may be gone on with without danger.

Recollect that the development of the chest muscles has nothing whatever to do with developing the lungs. Every gymnasium should have a lung-tester—and exercise for the lungs should have special attention as well as the rest of the body.

You seldom, if ever, hear a professional advise an amateur to close his mouth and breathe through his nostrils when in

a running motion as you see the race-horses do, notwithstanding it is the proper thing to do.

EASY EXERCISES FOR FEEBLE PERSONS.

Here following will be found some splendid exercises for morning, afternoon or evening, as you have time, especially before breakfast, with either dumb-bells, clubs, calisthenics, Swedish movement, pulley-weights, chest-bars, on stool or rings, all of which can be conveniently arranged in your house.

First.—Light exercise on stool or settee for persons who

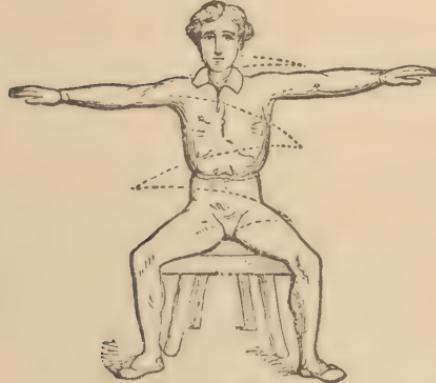


FIG. 66.



FIG. 67.

have sufficient exercise through the day for the lower limbs and not for the trunk of the body.

From sitting position, as shown in Fig. 66, arms fully extended in line with shoulders, lean the body well over, first to the right then to the left, always looking at uppermost hand. Fig. 53.

This is especially good exercise for loins, shoulder muscles and muscles at back of arm-pit, if leaning arm and body well over.

Second Motion.—From position, as shown in Fig. 67, a stretch, and lean body well forward, first to left, then to right, always returning to first position. After a pause from same

position, arms above head, bend forward between legs, trying to touch floor—without straining. The above exercises are very good for feeble and elderly persons or persons crippled in the legs.

Third Motion.—From a sitting position, arms above head,



FIG. 68.

lay back as shown in Fig. 68. Return to first position, then bend forward, and without straining try to touch the floor with your fingers. Then raise again to first position. So continue about six times, always taking a full breath when in upright position.

This exercise is good for abdominal, spinal, deltoid, and chest muscles.

In winter, if very cold, rub the body over with a wet bath towel, wetting and

drying each limb at a time; treat back and back of neck the same way, shoulders, arms and especially feet, clean them well. Be sure not to wet across the stomach or entrails too much with cold water, as it is likely to chill you more quickly than by wetting any other part, especially if you are slim.

The following exercises may be gone on with after you feel stronger, for which time I allow nine days; and experience has taught me to strive to avoid soreness, in which I wish to caution others. Do not forget the rubbing before and after exercise, especially after if perspiring.

The last four days of the nine finish your exercises by running around the room, making your track the shape of a figure eight, and reversing. This is to avoid any dizziness which is likely to occur with dyspeptic persons in a small room. A little bay rum or alcohol may be used after bathing, or the author's lotion, made especially for that purpose.

2d Exercise. First Motion.—From a standing position, with arms extended in front of chest, palms of hands together,

raise the arms, then pass them backward and downward, leaning back and looking upward, returning back to first position. Do this about eight times. Fig. 69.

This motion extends the front muscles of the neck, takes the muscles all around on top of the shoulder, extends the chest muscles when arms are back, as well as the abdominal muscles.

Second Motion.—Arms extended at sides in line with shoulder; make motion from right to left eight times each way. Fig. 53. This motion exercises the loins, deltoid, dorsal, leg and neck, and is a splendid exercise.

Third Motion.—Arms extended above the head, then bend well down, trying to touch the floor with the fingers without bending the knees. Raise up, lean back and look up (Fig. 47). say six times. This is a good exercise for the spinal muscles, and a good extensor for backs of legs, abdomen, chest and neck.

Fourth Motion.—Body erect, hands on chest, fists closed, feet about 10 inches apart. From this position strike down and up, at same time looking up, always returning hands to chest, with or without bending legs, as you desire, eight times with the legs bent and eight times with legs straight is best, with or without dumb-bells.

This exercise develops the body generally, and is one of the best motions for the spinal and deltoid, and for raising the diaphragm and chest when leaning well back in upward position. See central figure in Fig. 70.

Fifth Motion.—Then go through the same motions with dumb-bells if above motion is done without. Commence with light bells, say two to four pounds, or according to strength.

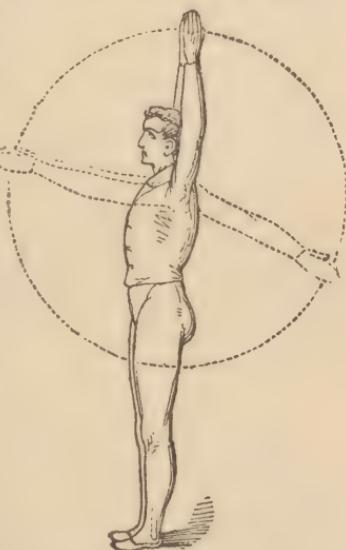


FIG. 69.

Sixth Motion.—Finish up with the motions as shown in Fig. 70 without bells, touching floor with fingers, stepping out first to right, returning to first position, then to left, and



FIG. 70.

so on, striking up when returning to first position. Do this about eight times each way.

Seventh Motion.—Finish by running around room, then bathing, rubbing, etc.

EXERCISE FOR PERSONS IN MEDIUM HEALTH.

Persons in better health may go on with special motions, such as the preceding exercises, from 1 to 7, always winding up with an exercise that has a good deal of action, to keep away the monotony—lifting your legs at a running pace forward then back, then to right and left (see Figs. 71 and 72), and running round your room, or skipping. Fig. 73. Or should you not wish to take so much exercise, pick out three or four of the first motions, and finish with the last. Your exercise should be changed from time to time, or pick out a number of different ones to your liking.

Heavy exercise may be indulged in occasionally, such as

putting up a dumb-bell one-third your weight. See remarks on this exercise, pages 21, 22, 23, and Figs. 23, 24, and 25.

Next exercise with same weight, dumb-bell passing under legs, holding handle with both hands, throw up and over head. Be sure not to let it too far back over the head as there is danger of straining, similar to Fig. 41. Then in the same way pass bell under legs with one hand, and change it into the other hand when coming up, and over to the opposite shoulder, and so on. Continue first over one shoulder, then over the other. Same Figure.

Next exercise with same weight. Lift bell on fore part of foot, Fig. 58; then lie down on the floor, and perform dorsal muscle exercise, Fig. 36, with fifteen-pound dumb-bell.

Next with a single bell, only one-third your weight, change it from one hand to the other, leaning well forward, feet wide apart, pressing the bell well behind you, similar to Fig. 55. Next, with the same bell in hand, step out and put bell on

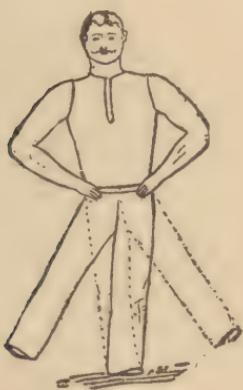


FIG. 71.

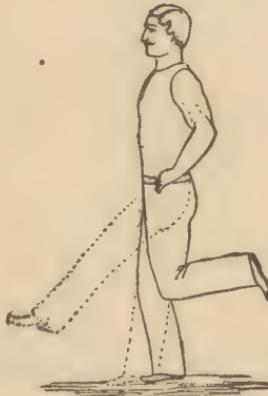


FIG. 72.

floor, then return to upright position without the bell. Then step out with the other foot and pick it up, and bring it back to shoulder as in stepping-out position, Fig. 70, continuing with other exercises hereafter prescribed as you get stronger.

LIGHT EXERCISE FOR GENERAL HEALTH.

First.—Clap hands at feet, then raise up, opening the arms as wide and far back as possible, and clap them above the head similar to Fig. 47, and look up to see that you clap them properly. This extends the abdominal muscles, raises the diaphragm, and benefits the body generally.

Second.—Without bells. Hands at chest, fists clenched.



FIG. 73.



FIG. 74.

Then strike out in line with chest, and bring back with as much force as your strength will admit of without too much exertion or jar to the body. Similar to motion in Fig. 74.

Third.—From same position strike up, then back to chest, then strike down to feet.

Fourth.—Raise left leg straight and as high as possible in

front of the body, and with arm on that side extended; hand open. Try to slap shin as close to foot as possible. This should be done alternately with each hand and leg six to ten times, according as strength will permit, increasing the number of times from day to day as you become stronger.

Fifth.—Body erect, hand on hips; stand on fore part of feet, which should be about twenty inches apart; sit down on your haunches on fore part of feet, rising again to first position. The back leg muscles are taken mostly when in an upright position, and the front when sitting. This exercise should be taken, say, from twelve to twenty times.

Fig. 75.

Sixth.—Exercise for general development of shoulder and leg muscles.

Body erect, head up, arms fully extended above head. First swing arms behind you as far as possible, coming on fore part of feet as you throw them back, say ten times, then forward ten times, revolving them around the shoulders, as in Fig. 69.

Slim persons should perform this action slowly, corpulent persons as fast as possible.

Seventh.—For winter mornings, to make this exercise more severe, step out a good pace, first to right, then to left; lean forward and touch the floor with the tips of the fingers, resuming an upright position, as in Fig. 47.

Eighth.—Light dumb-bell exercise for arms.

Feet together, body erect, dumb-bells in hand at chest; first strike down, then back to chest, then up and back to chest, then out in front of chest, say 6 or 8 times alternately each way, always bringing the arms back to the chest with force. See Fig. 74.

Ninth.—From position of arms above head, swing bells under legs as far as possible, and so continue about 12 times. See Fig. 41.

Tenth.—Fig. 76 shows an easy exercise for a resting motion.

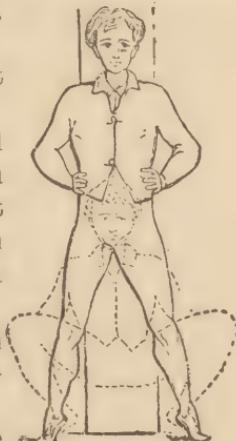


FIG. 75.

Swing bells from front to rear. They may also be swung over the shoulders, one after the other, or both together.

Eleventh.—Fig. 15 represents an exercise which is very good for spinal, trapezium, dorsal, deltoid and tricep muscles. Perform this exercise first with one leg forward, then the other.

Twelfth.—Fig. 77 represents a good exercise for the muscles of the chest, the biceps and abdomen, carrying bells well back as represented in cut, then bringing bells forward to

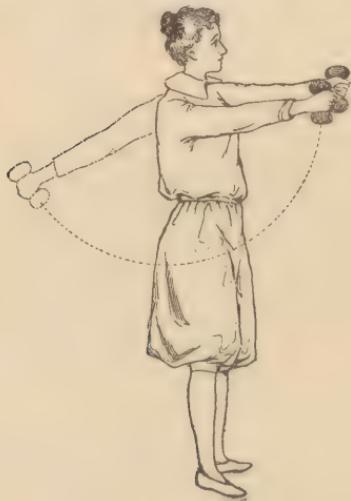


FIG. 76.



FIG. 77.

sides, and body erect, arms hanging leisurely there for rest; make a pause and continue the motion 10 to 15 times.

Thirteenth.—Fig. 78 represents an exercise which is good for the bicep, shoulder, hand and fore-arm muscles. First turn to right, then to left, strike out and bring arms back vigorously 12 times each way.

Fourteenth.—Fig. 52 represents an exercise considered very good for the muscles of the abdomen and legs. Lay body back on floor or stool, palms of the hands at your side on floor. Raise legs up, then revolve them first one way, then the other.

This can also be done with hands on top of the head.

This exercise is rather severe and should be done but two or three times at first. To exercise many of the muscles of the body at one time, to aid nature to a certain degree, to preserve the health of an individual, and to promote the general condition of the same, these exercises are very strongly recommended.

Fifteenth.—The bells in hand (see table proper weights, page 16), lying on your back on floor with arms crossed, revolve them round say eight to ten times, first one way, then the other. This can be done with feet closed or apart. See Fig. 33.

Sixteenth.—Fig. 32 represents a good exercise for chest and front shoulders, down arm to hand. It is termed the wing motion, and is performed with dumb-bells, while lying on your back, either on a stool or on the floor. With dumb-bells in hands, arms down by your side, you carry them outward to behind the head, touching them there, keeping backs of hands towards the ground.

Seventeenth.—Taking position as represented in Fig. 79, on stool or floor, strike up and down and carry forward and back, allowing bells to nearly touch when passing over the chest. This is good exercise for chest and front shoulder.

Eighteenth.—With dumb-bells in hand, feet apart, place bells against the chest; then strike down between the feet; then up above the head, letting head well back, looking upwards. Similar to central figure of Fig. 70.

Nineteenth.—From each motion always return hands to chest. If it is the desire to work the spinal muscles, keep the legs straight and bend from the hip only. If to work the legs and back when striking down, sit on your haunches, at the same time coming on to the fore part of the feet central. Fig. 75. Sitting down.



FIG. 78.

This exercise may be performed from 10 to 20 times. To make it more effective make the motions very rapidly, or use heavier bells.

Twentieth.—From an erect position step out twenty-five to thirty inches with either foot, touching the floor with the bells, placing them on each side of the foot, bring bells back to the chest, at same time stepping back to starting position. Then strike up with bells as in previous exercise ; alternating with other foot and step out. Fig. 70.

This movement should be repeated from 8 to 10 times with each foot, always remembering that being too severe causes soreness, which is seldom felt for several hours afterwards, often not until after a night's rest. Therefore it is necessary

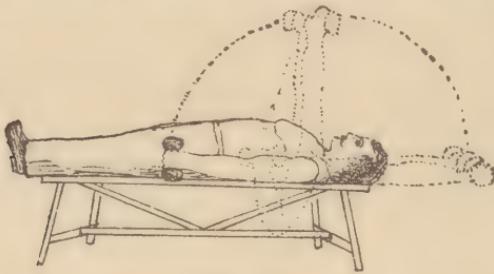


FIG. 70.

to use prudence at first. Should it make you sore, do it a less number of times at the next exercise, and it will relieve the soreness. Remember that what brings on soreness will take it away, if done in a mild form. This is the reason they walk or jog a horse after severe exercise. This, with plenty of rubbing and cleaning, causes the blood, which would otherwise deposit itself in the extremities, to be evenly distributed. We, or the horse, would avoid becoming sore or stiff. The minor capillaries lose their contracting power through over-exertion ; and cooling down too suddenly, become chilled. The blood remaining dormant in them is the cause of the so-called soreness and stiffness felt the day following the exercise, and shows the necessity of the human being taking exercise and rubbing as well as the horse ; though the general mode of treatment is to attend the horse with more care than the

human being. These stooping and stepping-out movements to a person not too thin, knead the bowels by the abdomen being forced upwards by the thigh coming in contact with the lower part of the abdomen.

Twenty-first.—The following is an extremely good exercise with dumb-bells for the general good of the body for those engaged indoors; and they will find much improvement by practicing it for a week or so at every available opportunity. An ordinary man should use one dumb-bell weighing about twenty-five or thirty pounds, or two smaller bells, say eight to ten pounds each.

Motion.—Body erect, feet about twenty inches apart, bell between the feet, grasp it with hands, and lift it to shoulder, and push it up once, as explained in exercise for dumb-bell pushing, page 21, see Fig. 23. Put it down again, then come up to an erect position without bell, placing hands on waist, fingers to the front. Then bend body and head well back, at the same time looking upwards, as in Fig. 42. Then pick up bell with other hand and push up as before, and so on. Continue the motion for ten or fifteen times, if only a part of your exercise, but if making this your only exercise, say from twenty to forty times with each hand, which would give a good glow to the body. You should move the feet during your exercise.

If making a number of exercises, the motions should be changed from one part of the body to another, say from the trunk to the legs; then to arms; then to side, neck, ankle, chest, and spinal muscles.

Twenty-second.—A good leg exercise is to run around your room, also marking-time running, throwing legs well up forward, then kicking out to right and to left, then backwards. Figs. 71 and 72. After this exercise take a breathing spell.

Twenty-third.—Following the above should be this, an easy exercise. Stand erect, hands on hips, fingers to the front; then bend the body first backwards, then forward, then to the right, then to the left, looking upwards; then revolve the body round, first to right, then to left. Similar to head cuts, Figs. 6, 7, 8 and 9.

Twenty-fourth.—A more severe exercise, in which dumb-bells should be used. Extending arm upwards, back of the hand up, and bending the body from right to left, and *vice versa*. See loin exercise, Fig. 37, on page 36.

Twenty-fifth.—Next swing bells under legs and over shoulders. See Fig. 41.

Twenty-sixth.—Then step out, first to right, then to left, touching bells to floor, bringing them back to chest, and pushing them upwards, and so on continue. See Fig. 70.

Twenty-seventh.—Next push up bells, commencing with bells at chest, pushing one up, and letting one down at the same time. See Fig. 24.

Eight or ten of the above exercises should be sufficient before breakfast, for the morning, and the whole should not take for their performance more than fifteen or twenty minutes. If you cannot spare that much time, then do each exercise a less number of times, or push a bell up with each hand, then swing them under the legs and over the shoulders. Then from an erect position, feet apart, arms straight at side, raise them at your side over your head, first with your right, then with your left; then running, jumping or skipping. These four exercises will be found the most beneficial for a short exercise.

The effect on general feeling and appetite will be wonderful after a couple of weeks' exercise for five minutes before breakfast each morning.

Figs. 25 and 37 represent a very fine exercise for the loins, dorsal and under muscles of the arm up to the hand, and those muscles running obliquely through the body to the opposite sides. Ten or fifteen times is sufficient for a robust man with a six to eight-pound dumb-bell. Weaker persons should exercise a less number of times, and with less weight, accordingly.

The above table of exercises is for professionals wishing to select a number of exercises for treatment during their attendance, and those wishing to treat themselves, choosing such exercises from time to time as may suit them best, though the routine should always be followed.

PULLEY-WEIGHT AND ROWING-MACHINE EXERCISES.

Showing and Explaining the Development of Various Muscles.

The new Columbia Parlor General Exercising and Rowing Machine is an ingenious contrivance, invented and manufactured by Prof. J. R. Judd, and never seen until made by him. It will be found an excellent apparatus for general exercise; especially so in the development of many muscles, as it coaxes you to exercise after commencing.

Many comments have been passed on the usefulness of the apparatus, and many complimentary indorsements have been received from prominent physicians and professional athletes throughout the country. These, therefore, are a guarantee of its great practicability, as well as attesting its many good

qualities. It is readily adapted to the use of the young or old, weak or strong, and easily adjusted to suit the strength of the operator.

Many thousands have been sold, and are used constantly in colleges, gymnasiums, and private dwellings; also where no other machine for similar purposes has been admitted, and in the Professor's institution there are from twenty to thirty persons per day exercising thereon continually for the development of the different parts of the body.

One of the leading physicians of this city, whose advice

is eagerly sought after, in speaking of this machine, says he always keeps one in his bedroom and exercises on it regu-



FIG. 79a.

larly. He affirms that its daily use gives him a good appetite for breakfast, and causes him to sleep soundly at night.

The Columbia Parlor General Exercising and Rowing Machine can be seen and tried at any sporting-goods store. Prof. J. R. Judd can be seen at his residence, who himself is an example of muscular development, although he is not considered a large man. One need but to feel his pectoral, dorsal, deltoid, triceps and bicep sinews, and the other extensors and flexors of his breast, arms and legs, to be convinced that neither Diomedes, nor *Aeneas*, nor any other hero celebrated by Homer or Virgil could show a finer muscular development.

Those who have to wield the pen all day, or pursue some similar occupation calling the brain rather than the sinews into action, can by these simple means, placed within easy reach, keep themselves in health, and grow equals in puissance to the muscular heathens of classic Greece and Rome, of whom we read so much in our school-days.

It is a duty we owe ourselves and our Maker to give our physical as well as our mental constitution a fair chance for growth, health and improvement ; for as Thomson sings :

“ Ah ! what avail the largest gifts of Heaven,
When drooping health and spirits go amiss ?
How tasteless then whatever can be given !
Health is the vital principle of bliss ;
And exercise of health.”

Below will be found some special movements on the Columbia Parlor General Exercising and Rowing Machine.

NECK EXERCISE.

1st Movement.—Front of neck.

2d Movement.—Back of neck.

3d Movement.—Right side of neck.

4th Movement.—Left side of neck.

All these movements require a skull cap to perform them properly, or a piece of belt webbing to go round and over

the head and under the chin, to prevent the headgear from slipping off. See Figs. 80 and 81. A rubber strap may be attached to headgear and used in place of using pulling weight for exercise.



FIG. 80.

**DELTOID MUS-
CLES.**

Side toward the machine, pulling up over the head, arm at full length, and back of hand upwards. Fig. 82. The muscles on top of the shoulder are exercised.



FIG. 81.

To pull upwards and forward from a pulley attached to the floor, when standing with back to machine, the front part of deltoid muscles are directly brought into play; these muscles extend outwards and downwards from the center all around from front to back of shoulder, and are always put to a test in the direction you pull, push, or lift. When facing machine and pulling upwards and backwards over the head, the front part of the deltoid is first contracted; then, as you raise the arm the muscle contracts from front to back of shoulder.

A pulling motion from behind, as drawing something on wheels in a forward direction, with the arms behind, finger-nails toward you, leaning well forward, or by pulling a weight from behind you forward, with the arms in line with the shoulders, will bring into play the front of this muscle.



FIG. 82.

BICEPS MUSCLES.

Take position facing machine, grasp handles with fingers toward you, then pull into the chin. Fig. 83. This exercise

develops biceps principally, thence muscles over shoulders to back, through the body obliquely to the front muscles of legs.

FORE-ARM.

The motion to develop the fore-arm is similar to that in above exercise, only to curl the hand well in toward the fore-arm in every direction, keeping elbows rigid. See Fig. 84.

CHEST.

The chest muscles are developed by exercises shown with the following figures:

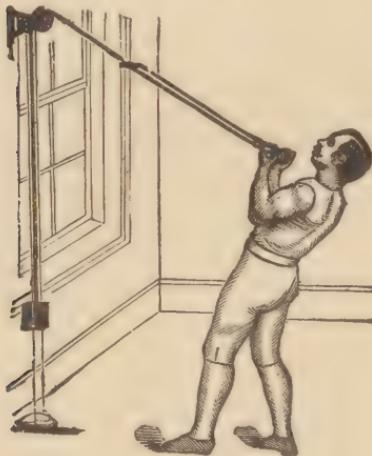


FIG. 83.



FIG. 84.

Fig. 85 is where the chest muscles are put to their greatest test.

Fig. 86 is developing inner arm of right to pectoral, of left, up forearm to back arm, dorsal and trapezium.

You can exercise the chest by pulling hands into chest, with elbows the height of shoulder.

Fig. 87 is developing chest muscle, side to machine when pulling.

Fig. 88 is developing fore-arm bicep, front of shoulder and upper part of pectoral; in upper motion the deltoid or shoulder muscle.

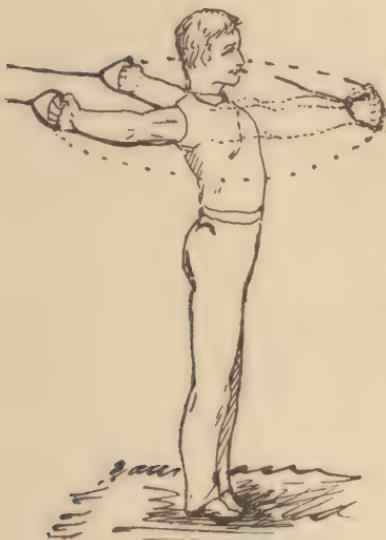


FIG. 85.



FIG. 86.

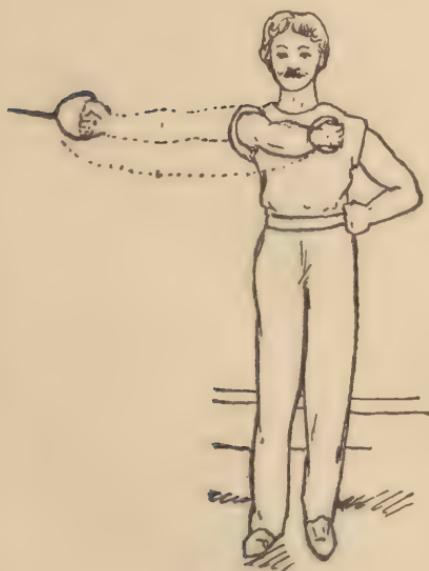


FIG. 87.

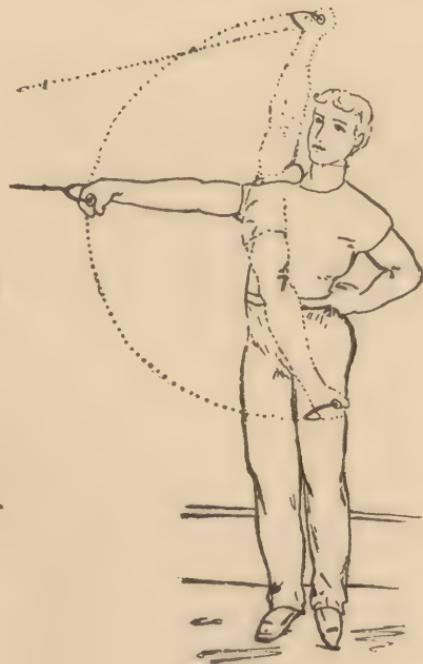


FIG. 88.

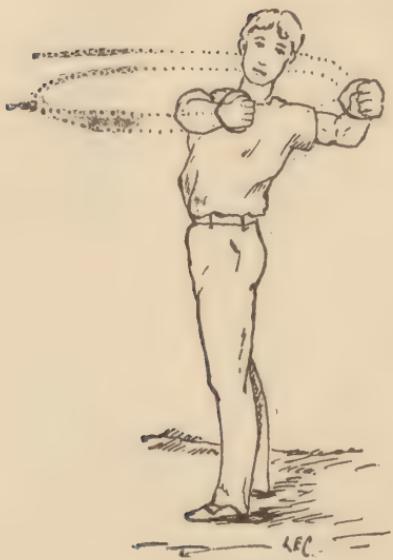


FIG. 89.

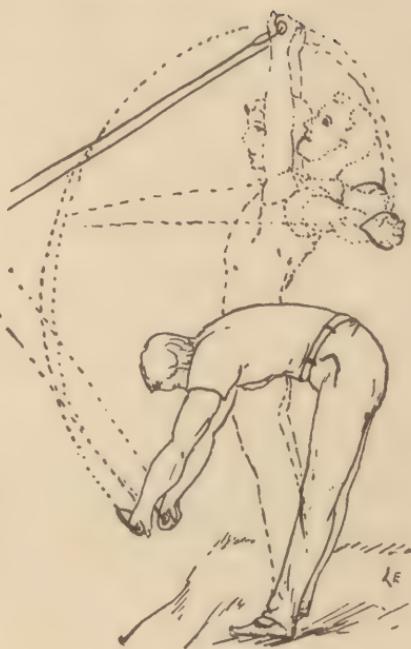


FIG. 90.

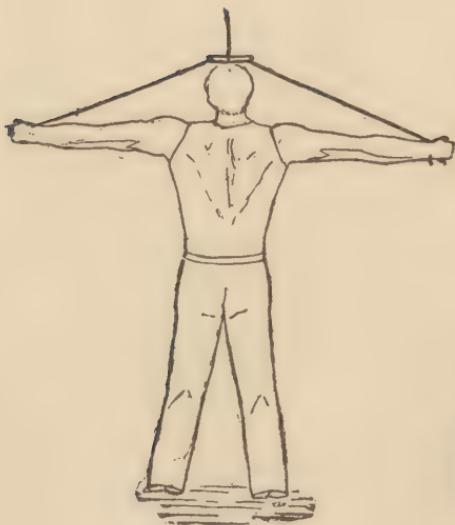


FIG. 91.



FIG. 92.

Fig. 89 is developing the inner part of right to pectoral, and outer part of left and left loin.

Fig. 90 develops on the downward motion, the under and inner part of arm up and slightly into pectoral; in the central motion from back of hand to trapezium muscles; in the upper motion from back of hand down the arm to back of deltoid and trapezium, touching dorsal.

TRAPEZIUM, OR MUSCLES BACK OF AND BETWEEN SHOULDERS.

Any motion made when facing the machine, standing upright and pulling backwards, especially with arms to full



FIG. 93.



FIG. 94.

extent, must bring into play the back muscles of the arm and back.

Facing machine, pulling arms out to full extent, as far back as possible, in line with shoulders, leaning a little forward, with one foot forward, or both feet even, always throwing head well back at same time you pull backward. See Fig. 91.

The trapezium muscles are also developed by pulley-weight upwards, from a pulley attached to the floor, or by rowing or forward lifting motion. See Figs. 92, 93 and 94.

Fig. 95. Single trapezium at back of right shoulder.

Fig. 96. The inner prongs of the triceps are the muscles put to their greatest test, especially when pulling with the thumbs, and turning them inwards toward the body.

DORSAL AND SIDE MUSCLES.

Stand sidewise to machine, and with hand furthest from it grasp handle of pulley, and bring it above the head, little finger uppermost, and with hand not being used toward machine, resting on thigh; pull weight up a little before starting,



FIG. 95.

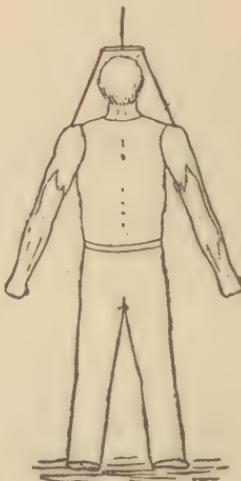


FIG. 96.

then pull out to full extent of arm, and let back; lean well over toward the machine. Do this 12 to 16 times. Reverse position and do the same with other arm. See Fig. 38. For double exercise with both arms, see Fig. 97.

Note.—For curvature of the spinal column always pull in opposite direction from the curvature.

ABDOMINAL MUSCLES.

All motions with the back to the machine, letting the shoulders well backward, with arms in line or above the head,

beyond the buttocks, when pulling on the machine, develop the abdominal muscles. See Figs. 97, 98 and 99, and similar motions on stool and floor. Figs. 49, 50, 51 and 52.

LEG.

Leg, Buttocks and Groin on Pulley-weights.

There are various ways of developing leg muscles. See Fig. 46 for methods on pulley-weights. Motion shown in Fig. 75:



FIG. 97.



FIG. 98.

sit down on fore part of feet and raise to first position. See other motions for above developments on pages 44, 45, 47, 56, 108, 109, 110 and 111.

ANKLE AND BOTTOM OF FOOT.

The ankle and bottom of foot can be developed by attaching a strap to the rope from lower pulley, in a similar way to leg

motion, Fig. 46, then placing the strap under the toes to pull outwards and behind you, or by pulling upwards with strap on top of foot, also by attaching strap to upper handles and pulling down by placing strap under the toe. These motions are performed best with stockinginged feet, or with canvas pumps, to obtain a clinch with the toes. Another way to develop the bottom of foot is to bolt a piece of wood about three inches thick to the floor, oval at bottom, so that you may stand on it with your toes and raise up and down.

FLOOR EXERCISE.

Sit down in front of and facing machine, with feet touching lower pulley; grasp handle, backs of hands toward the

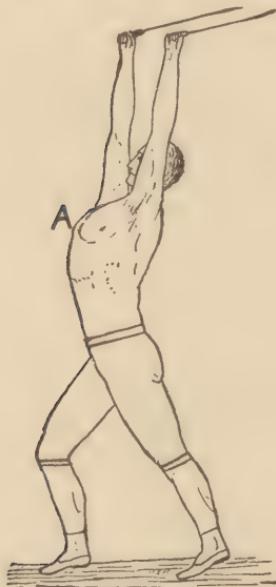


FIG. 99.



FIG. 100.

ground, pull up to chin and lie down in position as shown in Fig. 93. The muscles taken are from grip, upper part of arm, running over shoulder to spinal muscles. Very good exercise for male or female. A similar exercise may be done sitting on box or standing. See Figs. 92, 93, 94 and 100.

VARIATION EXERCISE WITH BACK TO MACHINE.

Fig. 101 is developing in the upper arm the inner part of triceps, and under part of fore-arm and dorsal muscle at back



FIG. 101.

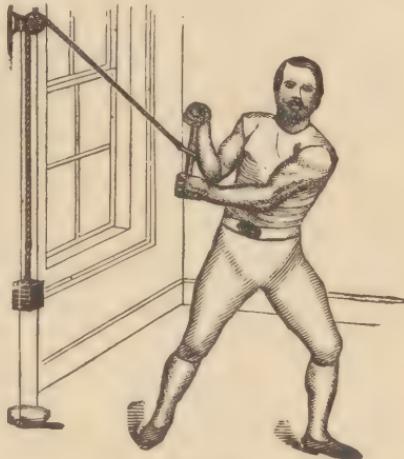


FIG. 102.

of arm-pit, and by the turn of hand, finger-nails to front, the chest is connected and not the dorsal, in the lower arm, front of fore-arm and biceps, including front of deltoid and chest.

Fig. 102 is developing inner part of right arm up and into the pectoral muscle; in left arm the under part of fore-arm, up back-arm, into shoulder and dorsal position while exercising with one foot forward, or both even, reversing the position of feet at half time of exercise if with one foot forward. See also Figs. 83, 85 and 86.

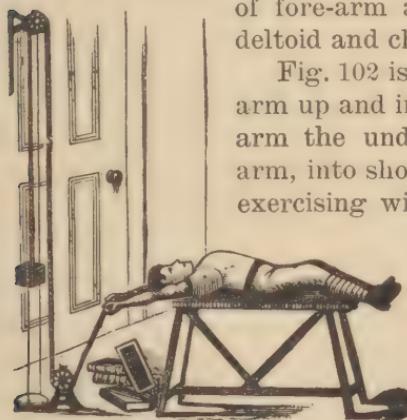


FIG. 103.

RAISING DIAPHRAGM AND CURVATURE.

Very heavy chest exercise with stool, Fig. 103, good for curvature, pigeon chest, sloping shoulders, etc., should be done with arms at full extent in line

with shoulders, also pulling up with arms straight until hands are over chest as with dumb-bell exercise on stool. Fig. 30. Hanging or swinging, on rings, with ring on the curvature side the highest, which is easily done by straps put through eye of ring.

Pulling weights from the opposite side from the curvature, Fig. 38, and skull-cap exercise, Figs. 80 and 81.

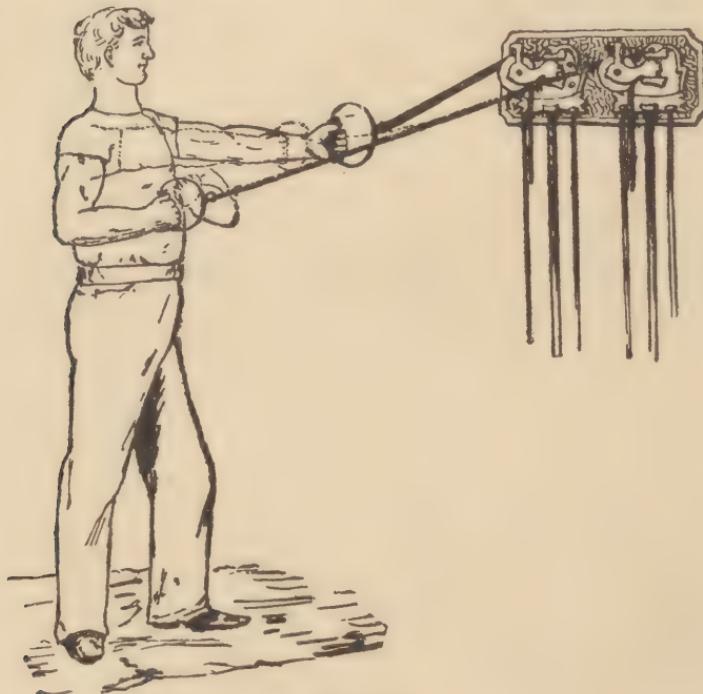


FIG. 104.

Always lying in bed on curvature side, and all motions where the body is suspended by the hands, curvature is easily cured, providing it is properly attended to when young, if the child is born healthy.

Fig. 104 shows a double motion on my rod pulleys.

Fig. 105 shows double wire machine, easily adjusted in house.

Fig. 106 shows a single machine which can be adjusted in ten minutes and taken down in five minutes; takes up six inches space and packs in a bundle, with handle out, so that it can be carried home easily.

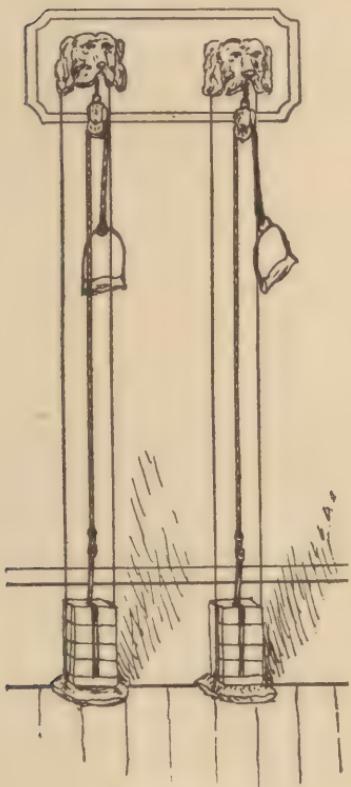


FIG. 105.

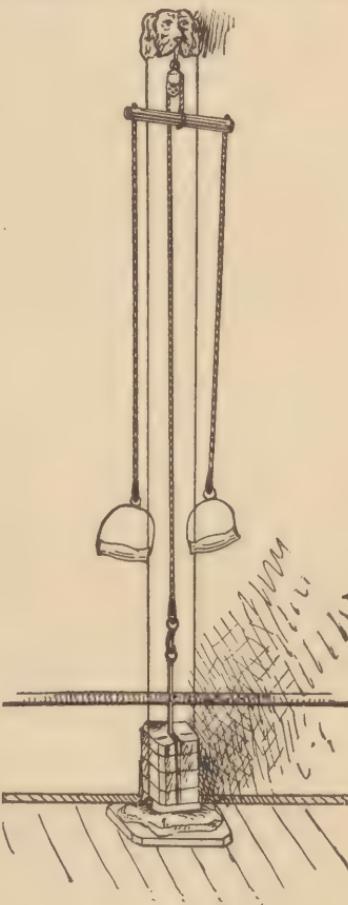


FIG. 106.

Fig. 107 shows my patent horizontal bar and brackets; puts up as window-blind; brackets nickel-plated, and the following: my patent doorway apparatus, a fine chest and dorsal developer.

Fig. 112 shows my new rubber pulley hooks on top of a door; takes down immediately; pulls to four strengths.

Figs. 113 and 114 show my new chest-bars.

Fig. 115 shows my new dumb-bells.

HEALTH.

The question as to how we can cultivate and maintain a proper state of physical health is a problem of the highest importance, not only to the present, but to the rising generation. It is one, however, that is not at all difficult of solution, providing certain conditions are considered and a regular sys-

tem is adopted. In the first place it is necessary that the body should be kept in a perfect state of cleanliness; secondly, to take care to eat and drink the right kind and proper quantities of food; thirdly, to secure sufficient rest so that we may thereby be more able to take *sufficient exercise*, by which the body may be strengthened and made capable of undergoing fatigue; fourthly, and above all, to attend to the functions of nature that they may be properly performed.

All persons who are engaged in sedentary pursuits, or placed in such positions that they cannot exert their body during their ordinary avocation enough to cause

good circulation and glow of heat, should strive to employ some other exercise sufficient to effect this desired result at least once a day, in order that a proper state of physical health may be attained.

It can readily be perceived, by perusing the following facts, that exercise causes good circulation of blood, and brings into action every portion of the system, thereby causing perspiration by means of which the impurities are being continually



FIG. 107.

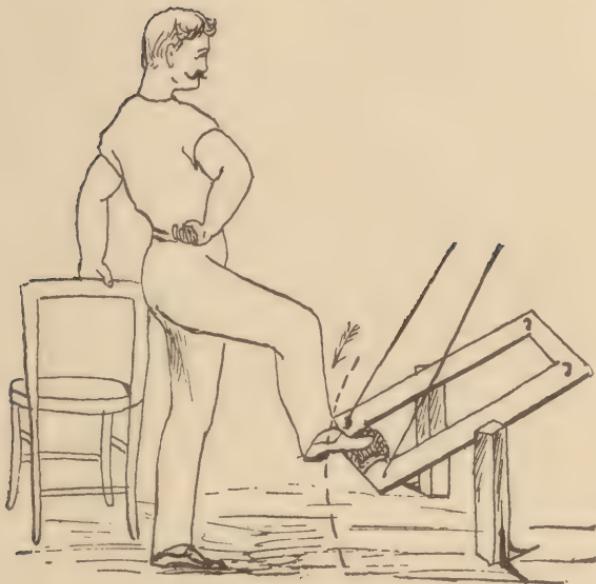


FIG. 108.

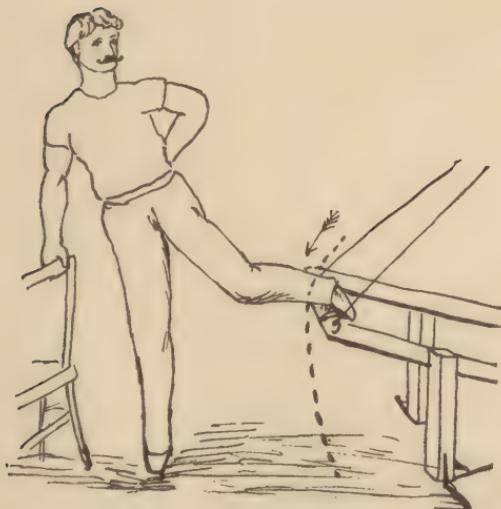


FIG. 109.

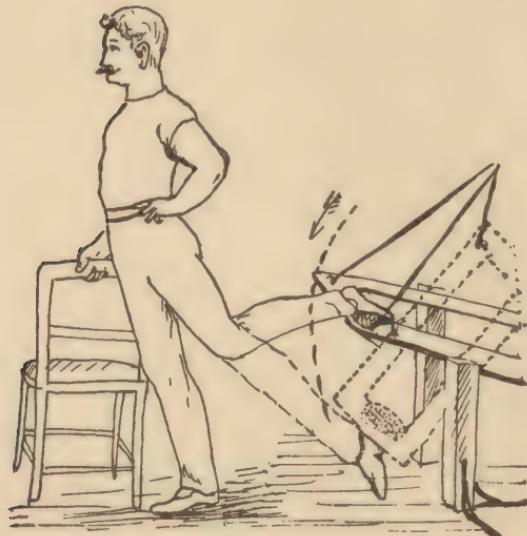


FIG. 110.

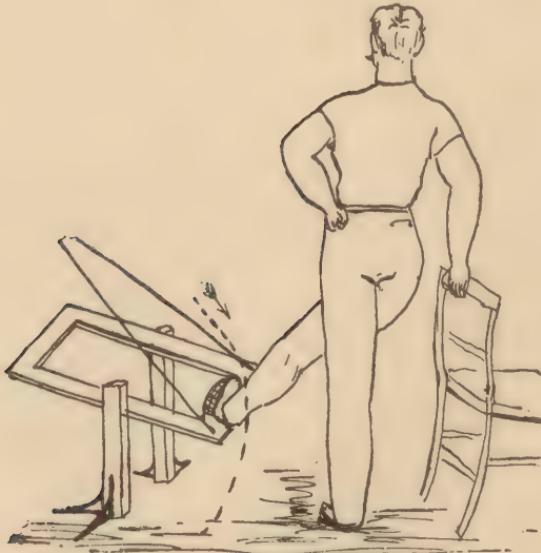


FIG. 111.

passed off both internally and externally, internally through the natural organs and externally through the pores of the skin. The blood, if in good condition, in its circulation replenishes a similar substance to that which is being continually used up by the action of the body, which if daily supplied with good nutriment will go to make good flesh, add strength, and *vice versa*. If the waste of a corpulent person is greater than the supply, of course the body becomes less. This is the principle upon which they are reduced. They do not, however, lose strength, but the reverse,

if the waste is caused by exercise, inasmuch as it makes them more spirited, the power of the lungs and all internal organs becomes greater and the fat becomes less, giving the former more room for expansion. It also makes the mind more active and better able to bear a strain. Weakness may be caused by reducing the body too rapidly — by over-exertion, straining, disease, insufficient nourishment or want of rest.

For instance, I have said that exercise causes every portion

of the system to act more rapidly. The digesting of food becomes much quicker and the absorbing system more ready

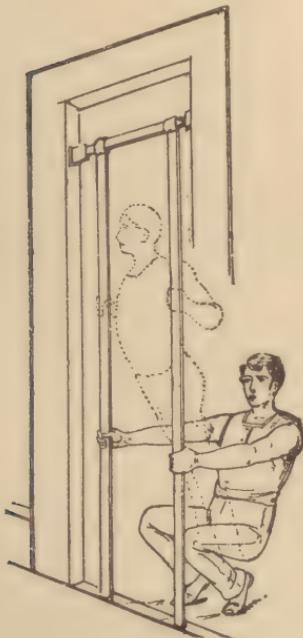


FIG. 113.

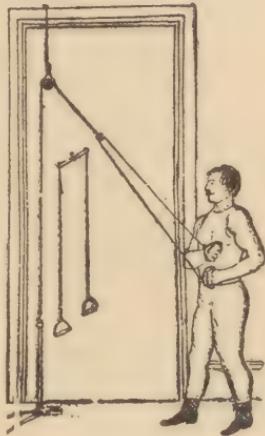


FIG. 112.



FIG. 114.

to take up that which is prepared for it, namely, the chyle, which is the extract of the digested food, and must contain the same properties thereof. All of which goes to show that the substance of that we eat and drink is absorbed into the system to sustain life or otherwise. By this you may understand that you cannot obtain good qualities out of bad food. Water will not supply you with as much nourishment as milk, nor turnips as beans, nor potatoes as rice, nor fat meat as lean, nor chaff as flour, etc. Nor can you hope to extract lasting strength from spirits, opium, tobacco, spices, tea, coffee, pickles, etc. How is the race-horse brought to such perfection? By training,

meaning thereby care, constant exercise, plenty of ablutions and rubbing, with good solid food of the right kind and in proper quantities. Not on grass, hay or cut feed, if he had a test of endurance to perform. Think of the human being in the same way. We could not expect to take five or ten pints of water, beer, coffee, tea, etc., with a great quantity of vegetable food, soup, pastry, etc., and be as active, strong, or

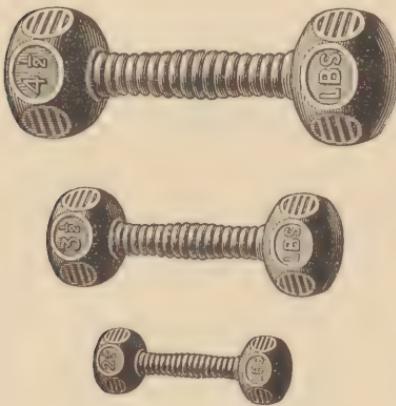


FIG. 115.

as well as the person who restricted himself to one or two pints of liquid, and ate only the proper quantity of plain, nourishing food per day.

MORNING RULES.

By observing these rules the processes of life and its powers of recuperation will be greatly benefited, and any one who will faithfully and persistently practice them will be in the right road to obtain and retain good health and keep himself in good condition.

I find in the majority of cases that no matter what attention business men and others give their body in the morning, as far as rubbing is concerned, as a rule it is not severe enough.

They should work moderately hard, slapping the legs, arms and back as hard as you can stand it, and should not resort to warm water and as much soap as you can lather on the body, face and hands, for this latter course only makes the person tender and more susceptible to cold, disease, and other vices.

After arising in the morning, first attend to the necessities of nature, and if not taking a bath rub the body all over with a hair brush, flesh glove, or rough towel—a piece of coarse sacking will answer. Either of the latter may be occasionally soaked in strong salt water, and hung up to dry for use. The latter process hardens the skin. After using gloves or brush it is better to wipe off with a soft towel and the hands ; always finish by rubbing downward, as it closes the pores. The lower part of the body may be attended to first in winter, then don the drawers and socks. A slim person, or one with any ailment of the stomach, should always protect it with covering, more especially in winter ; to do this tie your undershirt around your waist, body part in front, then attend to the upper part ; after which put on undershirt and bathe well the face, temples and back of the neck in cold water, then rub well with a towel, especially the back of the neck in winter. Water is beneficial, if only wetting one end of a towel to rub with, and a bath all over is necessary occasionally.

An artificial method to awaken and enliven you quickly, or to keep you awake, is to inhale freely through the nostrils from a bottle containing a little spirits of camphor and ammonia.

Next wash the teeth with salt, then rinse them—dirty teeth and soft gums cause a bad taste in the mouth. The best way to avoid this bad taste, and at the same time harden the gums, is, in the first place, to have them properly cleaned by a dentist, after which wash them every night and morning, and when the gums are healthy, you can wash them with a brush without bleeding ; then the salt can be discontinued. Then wash them with white soap and powder, and once in two weeks with salt. In case of decayed teeth, if a person can have them built up or filled, it is much better than having them extracted, as false teeth can never equal natural ones.

The cause of a person waking up with a foul mouth in the morning is more often from neglect to wash the teeth over night than from any other cause, thus allowing the small particles of food which have lodged between the teeth to become decayed.

BATHING.

The subject of bathing is one of great importance, more particularly so as certain kinds of baths have of late been extensively advertised, and in many instances have been recommended by the medical profession. I refer to the steam, hot air, sulphur and mercurial baths. However beneficial these may prove to persons suffering from actual disease, they can only prove injurious to a healthy person. The reason is obvious. Left to his own resources, without the artificial methods introduced into civilized society, man would bathe in the river or the stream, and when from any reason this was inconvenient, he would, in bathing, reproduce those conditions as nearly as possible. The water employed would be of the same temperature at which it was found in the river in summer. This suggests the propriety of the cold bath for persons in the enjoyment of moderate and good health. Warm water is occasionally necessary for the purpose of removing the mucilaginous and oily secretions which exude from the pores of the skin. In cold weather, however, these excretions form a protection to the body, and if removed too frequently by the use of warm baths, or artificial sweating, there is great danger of taking cold and contracting infectious disease through the pores of the skin.

In taking a bath in the morning, as a general rule, the head and back of neck should be the first part wetted, by the hands, not by falling water from a spout or a shower. The water should be as cold as it is in summer, and the bath taken quickly. Soap may be used under the arm-pits and private parts once or twice a week in summer, but in winter once in every seven days is enough. I do not believe in scrubbing with brush when bathing, either with or without soap, but the brush may be used in moderation, dry rubbing, cold water, etc. Cold water should,

at all times, be used in summer. If bathing in fresh water for strengthening purposes, the body may afterwards be sponged over with salt water, made in the proportion of a handful of rock salt to a quart of water. This will act as a preventive from catching cold. After bathing be sure and rub perfectly dry, which should be done quickly with a soft towel, or cover yourself with a sheet, to remove the drops of water standing on the body; then rub with a dry towel, to remove the dampness remaining; also a third time with another dry towel. Then rub well with the bare hands up and down, but finish by rubbing downwards. If in winter, after bathing, be sure and stand on a mat or carpet. When dry, *good bay rum* may be applied around the loins, down the spinal column and private parts. It may be used, with a little sweet oil added, all over the body in cases of weakness, or as a preventative from catching cold, as it stimulates the circulating system, causes more action of the nerves and more heat by the contraction of the skin caused by its appliance. It is also a remedy for pains in the back. If, however, this cannot be obtained, the best of spirits may be used. Bathing, as a rule, should be avoided on a wet or cold, windy day, unless prescribed and attended by a competent person, as one is more likely to catch cold. If not bathing the whole of the body be sure and bathe the back of the neck, shoulders, down arms, and cleanse the feet, as they should be particularly looked after. Regulate your underclothing according to the weather. If damp or windy, warm clothing is needed. Good, thick underclothing will protect the body better than an overcoat.

The various methods of bathing to which I have referred, such as scrubbing with brushes to excess, hot air, etc., are apt to irritate the skin and leave it tender and sensitive, instead of *inducing a healthy and vigorous action*. The alkaline properties of the soap have also a deleterious effect when used to excess. Such methods should be employed very sparingly and only to accomplish some definite purpose, such as removing impurities which will yield to no other means.

The steam or hot air bath is sometimes useful to induce

perspiration on the part of a corpulent person who is unable to take the necessary exercise to accomplish that object in the ordinary manner. But those baths and the medicated baths should never be employed by thin or spare persons, as their tendency is to enfeeble and debilitate them, unless, as I said before, they are suffering from disease which requires that treatment.

Before breakfast a little exercise should be taken, to put all the organs of the body to their ordinary action and pressure, and drain the receptacles of any sluggish substance that might be lurking therein, so that when the stomach receives fuel, it is more ready to act upon it and prepare it for distribution, and to give you that full glow of life which we all want to feel daily. If you do not wish to exercise indoors, dress, and take a walk or attend to business for an hour or so. The exercise should be according to the temperature ; if warm, gentle; if cold, vigorous. A few minutes' rest after exercising, however, is necessary before eating.

The benefit of exercise : Brightens the eye, quickens the hearing, increases the wind, elevates the mind, increases the appetite, causes good digestion and regular action of the bowels, prevents sickness and bad vices. All the good qualities which by its means may be secured certainly make a man more fit and able to attend to his ordinary avocation, whatever it may be, while at the same time it enables him to act with more decision in any case of sudden emergency than he otherwise would do.

To quicken the mind and give power and agility, proper nourishment, with good care of the body, is the only true way.

But the Professor believes—

“ As a rule, those that have time and wealth
Would rather attend their hobby than their health.”

The above treatment is followed out under the care of the author, who has had thirty years' practical experience in physical culture. His practical and beneficial exercising machines can be obtained from any dealer.

A NUMBER OF EXERCISES IN SHORT.

So that you may pick out your figures and continue following them after learning the motions, varying, changing from one part of the body to the other, thereby exercising the whole, without bringing any special strain on one particular part, at the same time avoiding monotony, and causing a pleasant feeling to mind and body.

1st Exercise. Is a mild one for arm, shoulder, back and calf muscles.

Stand erect, feet close together, hands by side ; extend arms in front and in line with chin ; palms of hands together ; then throw arms behind you in line with shoulders, at the same time coming on to fore part of feet, keeping body more erect, as the figure shown represents the second exercise, which is more severe, and the first exercise cannot be done in that position by leaning back. Do this 8 or 10 times without dumb-bells ; then with about four-pound bells. See Fig. 69.

2d Exercise. For arms, deltoid and chest muscles.

This may be done with or without dumb-bells. Position as in first exercise ; arms extended in front of chin. From this position lean body well back and pass arms behind you and downwards. Head well back and looking upwards. Do this 8 or 10 times. See further explanations on chest. Page 29 and Fig. 47.

3d Exercise. For spinal column, leg, arm and chest.

From position as before without bells, step out well, first to the left, bending well down, extending arms so that fingers touch the floor, or as near as possible ; then step back, with arms and hands extended upwards ; carry them and body as far back as possible, looking upwards ; then step out with right foot, and perform same motion about 8 times with each foot. See Figs. 70 and 77, which show the step-out motion with dumb-bells.

4th Exercise. Loin motions.

Position : With feet apart about twenty inches, hands above hips, fingers to front, thumbs behind ; then lean body and head well back, looking up ; then well forward. Do this

each way 4 to 6 times. Then from starting position, as before, lean over well to right; then to left, looking upwards; same number of times. Then from starting position, as before, revolve body well round, first to right, then to left. See Figs. 43, and 6, 7, 8 and 9 in neck exercise, as similar motion revolving from waist.

5th Exercise. Legs. Running.

Run around the room on mark-time running, and throw your legs from left to right and jump, marking time, similar to skipping. See Figs. 71 and 72.

The above exercises are sufficient for a man whose time is limited.

EXTRA SHORT EXERCISE FOR BUSINESS MEN.

1. Strike down, then up vigorously; feet about eight inches apart, and from position, hands at chest. See Fig. 77.
 2. Kicking up forward, back and right to left. See Figs. 71 and 72.
 3. Center of body exercise; with feet 10 inches apart, arms out in line with shoulders, lean well over first to right, then to left side. Fig. 53.
 4. Then bend forward and back: with arms extended above the head, lean well back and look upwards. When bending forward bend legs but little. Fig. 50.
 5. Push up a moderately heavy bell, first with one hand, then the other. Fig. 25.
 6. Swing same bell under legs and over head, as central of Fig. 70.
- Note.—*After the above matter has been read several times the reader will be materially aided, in quick reference to same, by noting the following cuts in the order given, viz.: See Figs. 6, 7, 8, 9, 25, 29, 43, 47, 50, 53, 69-72, and 77.

ANOTHER SHORT EXERCISE FOR BUSINESS MEN.

Each motion 8 times.

1st Exercise. Arms, loins and legs, with or without bells. See Figs. 47, 53, 54 and 55.

2d Exercise. Push up heavy dumb-bell, say about one-fourth

your weight. For explanation see loin exercise, or pushing up dumb-bells, remarks. Page 21, Fig. 23.

3d Exercise. Neck exercises. First series, without weights; see neck exercises. First position should be as in Fig. 43. Then perform motion as shown in Figs. 6, 7, 8 and 9. For explanation see page 12.

4th and last Exercise. Leg and arm. Figs. 69 and 75.

Skipping rope in various ways if you can; or running. See Figs. 71, 72 and 73.

In winter time these exercises should be done more rapidly than in summer; a wet towel may be rubbed over the body after. Or a towel bath in your bath-tub, if your room is sufficiently warm. After which be sure to rub perfectly dry. See remarks on bathing, page 90.

EXERCISE WITHOUT APPARATUS.

1. Let him first lay on his back on the floor and raise legs up until feet come over chest; 8 times. This is good for Bright's disease. Fig. 49.

2. Raise body up, as in Fig. 48, 8 times, trying to touch the toes with fingers.

3. Extended, as in Fig. 53; 6 times.

4. Motion, as in Fig. 45, on a settee.

5. Four times, as in Fig. 44, on settee.

6. Jump and kick your legs out in every direction, front, back, right and left; see Figs. 71 and 72. After which a few light exercises are good, such as :

7. Going down on your haunches 8 times. Swinging your arms 8 or 9 times round, as in Figs. 43, 47, 54, 69 and 75, finishing by running round your room 20 times.

Other very good exercises are, as Fig. 47, only with hands clinched, striking down with force, then up with force, looking up as shown in figure. Do this 20 times.

Then, as in Fig. 27, down on floor, with hands and toes touching only; from this position try to kiss the floor without resting the body thereon. Return again to first position. Repeat 8 to 10 times.

Next a skipping-rope is good to skip 25 or more, 3 succes-

sive times, resting ten to fifteen seconds between each skip. Fig. 73.

Then body motion, as Fig. 47, first forward and back; 8 times; then right to left 8 times. Then inflate the lungs well and slap the chest all over.

Then stride and step out, first to right, and then to left, stepping and striking out as far as you can, same as Fig. 78, hands level with the chest.

LOCATION AND DUTIES OF MUSCLES.

Figures on pages 6 and 7.

1, 2 and 3. Neck muscles—classified as follows:

Sterno, cleido, mastoid are attached at back of ear and at breast bone; their use is to move the head forward and downwards to the left or right, to pull or push any pressure in that direction which may be applied above that muscle.

Platisma myoides are attached to lower jaw, and run backwards to shoulder; are used to move the head, pull or push pressure to the right or left, backwards, or to help hold the body up if suspended by the chin.

Sterno hyoid; used to bring the head directly forward and weight if attached thereto, also to help hold the body up if suspended by the chin.

3a. *Trapezius* muscle is a large diamond-shaped muscle of the back, leading from back of neck to each shoulder, thence tapering off to center of back; its use at the base of skull (3c) is to pull or push the head, or any pressure put thereto, backwards. Its use at the shoulder (3a) is to help lift, pull or push anything backwards by the back of hands, or to help hold up weight when lying on the face, by the hands. Its attachment at the center of back (3b) is to help lift from the floor or to pull backwards, or to hold or raise the upper part of the body when suspended, or to hold the body rigid when balancing on a cross bar on your stomach.

4. *Latissimus dorsi*, running from under armpit down to center of the back, up under armpit; it is used with the trapezius muscles, etc., to help lift weight from floor, pull from

right to left, or *vice versa*, or to push anything in that direction, or to lift the body up when leaning in an oblique direction, or to hold the body up when suspended by the hands. See other remarks on dorsal muscles.

5 and 14. The *obliquus abdominus*, which are located at either side of the abdomen from chest to hip, cannot be exercised by leaning toward them, as stated and shown in other works recently written, as in every case where you put a muscle in tension, you must either lean from, pull toward and let back, or push from.

Its use is to turn the body around forward, or to help perform a rotary motion with the legs or body suspended, or to help pull downward to the right or left.

6. *Posterior* muscles, or gluteal region, or the muscles you sit upon, and which seem to be especially adapted for the purpose, in connection with others, are used to balance the body, to help raise the legs behind you, or to help lift, or to perform central contraction ; for instance, such a motion as a gymnast would perform by balancing the body in a stiff form across a horizontal bar when lying on the stomach ; also when pulling weight by the leg from before to behind you on a pulley-machine attached to floor ; and lastly, they are most useful in holding the body rigid when standing on anything in motion, such as when on board ship in a choppy sea, bareback riders in a circus, etc.

7. *Biceps* of the leg are at back of thigh, used to pull anything backwards or lift upwards, bringing the heel of foot into posterior muscle, to hold body rigid, to raise legs when suspended upwards behind you, or to help hold the body rigid if suspended from heel of foot to shoulders or head.

8. *Gastrocnemius*, or calf muscle, is used to raise the body on the fore part of feet, or to pull or push a weight downwards by the toes, included with the muscles under the foot, to hold the body rigid.

9. *Deltoid* muscle, on top of shoulders, is specially used to lift the arm or weight thereby from the side to above the shoulder, and to help control, pull or push forward or backward with the use of arms.

10 and 10a. *Tricep* muscles are at the back and outer part of upper-arm, running downwards in two prongs, similar to the large claw of a lobster, from the back of shoulder in an oblique direction down the arm, and are used to help pull or lift in any direction behind you.

11. *Ulnaris* and *digitorum* muscles, or back fore-arm group, lead from elbow down fore-arm to fingers, the tendons separating at wrist and running down to end of each finger; they are numerous, and it is unnecessary to mention the minor muscles; their use is to pull or push anything behind you with the back of hand, or to hold anything upon back of hand, and the two muscles, *supinator longus* and *extensor carpi radialis longus*, are the muscles which act in unison with *flexor* muscles to rotate the hand.

12. *Pectoral*, or large muscles of the chest, are used in connection with the front part of the deltoid muscle, to resist any pulling or pushing pressure of the arms backwards to anything forward from behind you, or to hold the body up when suspended by the hands, or holding up weight, when lying on the floor, back downwards, arms straight out in line with shoulders, and raising weight to over the chest.

Abdominal muscles commence from below the chest, diaphragm, to the lower part of abdomen. Used to raise the body forward when leaning backward, or to help raise the legs or body up should either be suspended in a horizontal position, or to hold body in horizontal position suspended by hands.

15. *Sartorius* muscle, called tailor's muscle, or muscle in front of leg passing from outer part of hip to inner part of knee. It helps to pull or lift the leg forward and inwards; it is used in riding, including inner fork of bicep and other interior muscles.

16. *Rectus* muscle, or front thigh muscle, lifts the leg, or pulls anything forward, or lifts the knee up towards chest.

17. *Tibialis anticus*, or shin muscle, used to lift weight on the instep, or to curl, or to bring the toes and foot into the shin, or to suspend the body on the toes as gymnasts frequently do, or to pull weight forward by the toes.

18. Muscles at bottom of foot are used to pull or push anything downwards by the toes, or lift the body up on the toes.

19. *Bicep*, or *front upper-arm* muscle, used to bring the hand to shoulder with or without weight, to pull forward from behind and to help pull into the chest, or pull body up to hands when suspended by them.

20 and 21. *Fore-arm* muscles are from hand to elbow, and are used to lift, pull, push or hold anything by the hand, to curl hand into wrist, and can be specially developed by pulling any weight in the hand towards the wrist or fore-arm, up, down, or to right and left, to help sew, throw, etc.

Hand muscles are used to grip, write, or turn any resisting pressure from right to left, or hold the body up when suspended.

EXERCISES.

EXERCISES AND MORNING ATTENTION TO THE BODY, IN SHORT, FOR ROBUST PERSON ONLY.

In winter, if you have warm and pleasant quarters, with all necessary conveniences, take a bath in your tub, or a douche. I like the idea of pouring a pail of water over the top of one's head. The water should not be cold enough to cause a chill, although it should feel cold ; after which you will find a pleasant reaction—a glow of heat, and life come back—after rubbing briskly.

If not favored with every convenience, wet a towel with water at same temperature as before and rub the body all over with it, excepting the stomach. If doubtful of taking cold or getting chilled, bathe one limb at a time and rub well dry. Then put on your underclothing and take a little exercise. If in a hurry just take one exercise, that of pushing up a dumb-bell one-third your weight, say three times with each hand. Then swing it under your legs, and first over one shoulder, then over the other, alternately ; see Figs. 23 and 44.

This suggestion of about the ordinary weight to be used in pushing dumb-bells is meant for healthy persons, and those weighing within 10 pounds of what a person ought to weigh, according to height. See page 11.

If you have time for two exercises, let them be punching a striking bag (Fig. 5) and pushing a dumb-bell one-third your weight. If time for three exercises—(1st) Kicking with legs, Figs. 71 and 72 ; (2d) jumping and catching horizontal bar, Fig. 107 ; (3d) pushing dumb-bells, Fig. 23.

If you have time for four exercises, let them be—(1st) Calisthenics, Figs. 43 and 53 ; (2d) leg motions, as Figs. 58 and 60 ; (3d) pushing heavy dumb-bell, Fig. 23 ; (4th) skipping, Fig. 72.

If you have time for five exercises, commence in rotation as in above exercises, adding stepping out motions, as in Figs. 58 and 72.

If you have time for six exercises, add to the five list, as the sixth exercise, running around the room.

If time for seven exercises, add in chest-bars exercise, as in Fig. 1, after pushing heavy dumb-bell. Then follow other exercises in rotation as for six exercises.

If time for eight exercises, add in the stool exercises, Figs. 42, 47, 48, 52, after the leg motion. Then follow in rotation as above.

If time for nine exercises, add in after stool exercise pulley-weight exercises, Figs. 79, 80, 83, 84 and 85, after which skipping from 30 to 50 times. Fig. 73. *

If you are not provided with the apparatus above mentioned, increase the number of motions in other exercises, and always recollect that you should regulate your exercises so as to take one part of the body, then another—arms, legs, central and neck—and after a hard exercise take an easy one; for instance, after skipping take chest-bars or floor motions.

Other exercises should be picked out and substituted from time to time in place of some of the above, so as to avoid monotony and suit your feeling, and for the development of those muscles you are not using in your daily avocation.

For principal spinal muscles, pull from lower pulley by head and neck; and with hands, coming from a bending position to an upright, or from sitting position. See Figs. 80 and 87.

Bicep muscle motion on lower pulley as curling dumb-bell

(see Fig. 80), moving arms only ; hands up to chin ; no back motion.

AN ELDERLY PERSON'S EXERCISE.

1st Exercise.—Lie on the floor on your back. Then raise your legs one after the other about 10 times up over your chest, as high as possible. Then try both together. Then come up, bringing the body into a sitting position. Figs. 51 and 52 on stool. Do this about four times, if stiff and old ; otherwise do it six times.

2d Exercise.—Lie on your back, arms extended above the head in line with the body. In this position roll over and over, and then back again.

3d Exercise.—Stand up, and run as well as you can around your room. Do not stop to think you are old, but go ahead.

4th Exercise.—Clap your hands together as low down towards your feet as you can. Then above the head, looking upwards, and so on continue 10 or 12 times quickly. The rubbing of the body and cleanliness, with outdoor exercise, is everything with the old person, as with the boy. An elderly female could perform these motions just as well as a male, if she persevered.

5th Exercise.—Pulley-weight exercise is good for the aged. From a standing position facing machine, pull downwards ; and sitting down, feet towards the machine, pull handle up to chin, lying down at the same time ; returning to sitting position ; repeat 10 times each way. Fig. 87.

INJURIES AND THEIR TREATMENT.

BRUISE.—My explanation of a bruise is, that the flesh is struck just hard enough to cause a swelling of the molecules of the flesh, yet not hard enough to burst them ; although many persons term it a bruise where the corpuscles are burst and the flesh turns blue or black. This I term maciation. The treatment for a bruise is an application of alcohol, arnica, chloroform, laudanum, citric acid or similar preparation, as they stimulate and contract the affected parts (a bandage

lightly applied assists); this contraction giving power to the damaged part, and preventing it from further swelling. This treatment, with rubbing and bathing in warm water, helps the blood on its course, thereby preventing stagnation.

MACIATION.—The treatment of maciation is different, as the corpuscles of the flesh are burst; it is essential, in such a case, to keep the blood warm and prevent its congealing. This is done by poulticing, hot fomentation, and keeping the affected part well wrapped up, which causes the blood passing on its course to pick up the blood spilled in the flesh, washing it along with it from the small capillaries into the larger ones—thus helping to carry off the stagnant blood that would have remained and congealed, turning first blue, then black, and finally yellow before disappearing. Not only that, but the parts are much injured by the stagnant blood, and are left sore for some time afterwards, while in my treatment they are not. Rubbing is good and should be done by rubbing out towards the nearest end of the muscle bruised, with judgment, and by an expert if one can be obtained.

SPRAINS.—Sprains are still different, although the treatment is similar.

A sprain is where the tendons are put to a greater test than they can stand, pulling on their minor ligaments to such an extent as to almost tear them from their attachments. The treatment is as for maciation. To keep the parts mellow, and to prevent contraction of the tendons, which would otherwise occur, use cold water two or three times a day for four or five minutes at a time, with light extension, exercise, proper rubbing and rest.

Then there is what I call a *ruptured sprain*, when the tendons are broken or torn from their attachments. This requires very careful treatment, different from the above.

First, if the skin is not broken, I apply an external irritant, or hot water to take away the pain, then bandage loosely with flannels (in no case tight bandages, to stop circulation), and endeavor to secure complete rest. After eight or ten hours, take off the bandages; then apply hot fomentations for fifteen minutes or more, providing the patient can stand it. If pain-

ful, use liniment, taking care to avoid blistering, with light rubbing by an experienced person only, as care must be taken not to move the parts too much, or start the blood by any forcible rubbing. Replace the bandage again, not too tightly. Repeat this treatment for three or four days, or, if a very bad sprain, for six or eight days. Then being overseen by a person experienced in this method of treatment, you may move the joint next to it. For instance: If in the ankle, the knee may be moved; if in the knee, the ankle may be moved. This relaxes the muscles and keeps them from getting stiff, which is as bad to cure as the sprain itself. If this is not attended to, the movement of one joint must slightly affect the next.

Bathe the parts with hot water, followed at once by cold water, three times a day, with a little mild liniment afterwards, and increased friction, rubbing mostly downwards. Bandage with a solution of equal parts water and vinegar and citric acid, to which add a little salt. If offensive, bandage with alcohol instead. Then, according to the sprain, exercise should be taken, much more quickly than most physicians think. Care should be taken not to use crutches too much, as their use impedes recovery and health of limb.

In short, treat a sprain, maciation or bruise as a dog would, through instinct. The dog at the time of the accident, if severe, howls, whines or groans, similar to the human being; then runs on his three legs into some corner or doorway, or stops and licks the injured part, and continues to do so from time to time, which corresponds to rubbing, and as he gets better he will continue to test it by putting it to the ground, to see how much weight he can bear upon it. This he does from time to time until well. A human being, as a general thing, will not do this, unless he is very poor and industrious, and has got to make a livelihood for his family.

A carpenter does not stop work when he smashes his finger with a hammer or gets it jammed between some logs of wood --accidents which occur every day on building work. He keeps on working. If severe, he bathes it in water and wraps it up in a rag, or puts on a finger-stall, and if his blood is in good order it soon gets better; if not, it festers and the corruption in

the body is drawn thereto, and he has a bad sore till it is washed and cleansed from the impurities.

A PREPARATION FOR CRACKS, CHAFING, SORES, BROKEN
BLISTERS, ETC.

The following preparation will be found highly efficacious: One-half pint of grated horse-radish; one-half pint of vinegar; one teaspoonful of citric acid; one pound of saltpetre; one-half pint of water. Place all together in a porcelain or earthenware pot with a close cover, and heat over a fire to the boiling point, then let it simmer for four hours, not boiling. Applied to a crack or a sore, it will, in one hour, heal the broken or injured surface, making the place as hardy as though a new epidermis had overgrown the spot. If a blister appears on the foot after running, the puffed-up epidermis may be cut away, and the raw surface treated with the preparation; or the preparation may be introduced under the loose epidermis. I have applied this treatment to T. P. Conneff and many others, and I know it to be effectual. There is a violent smart which soon passes away, and the injured spot is relieved of all tenderness. The preparation is also used by pugilists to harden the hands and face, and by pedestrians for the tender parts of the feet, but it should only be used on the feet to thicken or heal the skin, as it will stop one from sleeping if used freely.

SCALDS AND BURNS.

Water and fire are two of the most useful of all elements. Either of them will take away inflammation if applied with care. The burned or scalded person should hold the affected part in front of the fire long enough. Though causing great pain, this will effectually reduce and remove the inflammation, and, indeed, is the mode of relief generally employed by strong men in foundries and factories. Spermaceti and mutton tallow are the best to relieve pain.

CRAMPS AND INFLAMMATION OF THE BOWELS.

Hot flannels dipped in hot water, with a little turpentine added (one-half pint to two gallons of water), laid across the

stomach, are also effectual in relieving pain in that part, and hot packs wrapped around an inflamed joint, and alternated occasionally with extreme cold, are always beneficial. When you have finished with the above applications, anoint inflamed parts well with spermaceti, one-fourth, and mutton tallow, three-fourths; these should be applied warm to reduce inflammation.

HOME GYMNASIUMS.

Home gymsnasiums should be erected in every house, if only one set of apparatus, as it saves many dollars that would be paid for doctors' bills. Attending a gymnasium without taking instructions is a very common fault. I have watched for many years the young and old working in such places without the slightest idea of how to develop any part of their body, not knowing if they were doing themselves harm or good. This is a great mistake, especially with young men, as they are likely to rack themselves very quickly by working upon one part of the body at the expense of the rest; catching hold of everything for exercise with their hands, not thinking that to be healthy they should develop the body generally, to do which they should exercise all parts. It is better to pay \$50 a month, if you can afford it, to learn something about your system, how to develop the muscles, be bathed and rubbed after each exercise, with some good advice on how to keep healthy, than it is to pay \$30 a year to join a gymnasium, go there when you feel like it, remain ignorant of the exercise you need, and general care of the body, and do as you please. This should be stopped, and a certain time devoted to instruction in every gymnasium, during which time no one should be allowed to exercise unless in the class. A private examination should be taken individually to find out what parts of the body require developing the most, and then classed accordingly.

ADVICE TO GIRLS.

The young girl, like the infant, should be bathed and rubbed, and should be early taught the difference between

wrong and right, no less for the sake of her physical well-being as her moral welfare. How to benefit and preserve their health should be one of the first things instilled into their minds, and as girls are apt to enjoy fewer opportunities for out-door exercise than boys, they have especial need of instruction in this respect. See that they eat no rich food and are taught proper habits, and that they attend regularly to the necessities of nature, a point that is much neglected in our day.

Light calisthenics, such as are mentioned on the different pages (exercise before breakfast), are excellent for children as well as grown persons, but should be supplemented with plenty of open-air exercise. Too little attention is given to the physique of young people when coming to the age of puberty. At this, the most sensitive of all periods in their existence, they are most likely to get into bad habits, and should be especially watched, and care taken in correcting them. The carriage of their bodies, when walking, should be always upright, head and shoulders well back, and not on one side or bent forward, as is too often the case.

Many young gentlemen and ladies are sent to college too weak in body to be at all fitted for the course of intellectual labor marked out for them. There are many parents who think that all they require for the welfare of their children is a good education. They do not reflect on the severe strain on both mind and body necessitated by the acquirement of that education. Their children are sent away from home without the slightest instruction on the care of the body, or warning as to how their health may deteriorate if not properly cared for, possibly never to be regained during the remainder of a miserable existence. Plenty of exercise is necessary at this age, more than at any other time through life—no high living, plenty of cool bathing and light clothing on the bed should be the rule. I have had very many ladies under my charge, both married and single, young and old, and with new beginners I find some that are not able to take even two minutes' exercise without rest. The change for the better, after working two or three days under skillful treatment, is wonderful. Care should be taken not to let them go too far

in the commencement, and to give them a bath and rubbing after the exercise. This was always done at my institute, and in a short time they were able to run, hop, skip, jump, and go through a great deal of physical exertion with ease.

All private and public schools should have an open-air playground and a room for exercise, with apparatus affixed therein, that the pupils may not hurt themselves : such as swinging on the end of ropes attached to a roundabout, which may be fixed in a school yard ; football, throwing a good-sized beanbag, swinging on rings, with pulley-weights, rowing machines, calisthenic exercise ; and I believe there ought to be exercising apparatus erected in different parts of the city, in the parks ; it is next to bathing, and aids in giving health, agility and strength ; and there should be an official to attend and see that the apparatus is not monopolized by one party, or the privilege abused, and to preserve order and take care of apparatus if left out of doors.

FULL PHYSICAL POWER.

No man can obtain his full physical power and knowledge of how to use his strength under from three to five years. I am sustained in my opinion by such men as Dr. Austin Flint, Dr. Sturges, Dr. Perry and many other physicians of vast experience, including the great practical knowledge of Mr. Wm. B. Curtis, the present sporting editor of the *Spirit of the Times*, the best known authority on this subject, as well as Mr. Harry Beaumire, L. E. Myers, M. B. Ford and others who have had experience. You can find this out by referring to the commencement of any champion amateur's career, to the time when he performed his greatest achievement, at whatever he was champion of ; or by referring to any professional career in the same way.

Atrophy, or wasting away of muscle, is seldom caused by over-exercise alone ; if so we should hear of hundreds of cases from the circus profession—as some of these men have to perform and strain their muscles twice a day, besides intermediate practice, during the busy season.

The cause of atrophy I believe is brought on by dissipation, causing poor blood, using up that necessary when much muscular exercise is performed, not exercise alone. I have followed this matter up, keeping close watch on thousands, both male and female, and have as yet never known of a case, excepting from dissipation or injudicious dieting being the first cause, the muscles through which become weak from want of sufficient nutriment to feed them.

The body cannot recuperate after severe exercise without sufficient rest, rubbing and cleansing, and partaking of food not richer than the stomach can digest from one meal to another. The first and last suggestion are probably the trouble. The first, by being out late at night, and worst of all, in company with females; this, of course, is taking away strength and rest at the time most needed. The last, in eating rich food at the very time he should not, having still to continue his severe exercise as usual.

HEAVY EXERCISE.

Speaking of heavy exercise, I have known myself to exercise so severely, night after night for months together, that many nights I have moaned at the pain in my arms; and could not undress myself for some time after getting into my room, after giving a number of hard lessons, but have always recuperated with proper care and treatment, bathing the parts most affected well with cold water, then rub well with alcohol and soothing the muscles by rubbing them with the bare hands downwards; then rest, and no solid food taken immediately after any severe exercise, but a small quantity may be taken in a liquid form if at night; the rest, with a good bath and rubbing in the morning, will bring you out all right. When making extra efforts with your muscles, there should be no action with the lungs, but hold your breath in all such cases.

IMPORTANCE OF PHYSICAL EXERCISES.

Education may be divided into two parts, physical and mental. Of the former, exercises or gymnastics are the most extensive and the earliest portion.

Their extent is learnt by an enumeration of them, viz., walking, running, leaping, vaulting, pole-leaping, balancing, skating, carrying, climbing, and swimming. I have added throwing the discus; and, in a course of exercises, I think rowing, sailing, riding, and driving would be very improperly omitted.

The object of these exercises is to strengthen the muscular system by subjecting it to a regular process of training, and to teach the means of employing it most advantageously. The expediency of their early acquisition is rendered evident by the first tendency of youth being directed to them, by the rapid progress made in them, and by the delight derived from them at a period when the body is incapable, with real or solid advantage, of higher acquirements.

Their general utility will be questioned only by those who are not aware that the health and vigor of all the bodily organs depend on the proportioned exercise of each. In active exertion, the member exercised swells with the more frequent and more copious flow of blood, and heat is developed in it with greater abundance; and if we repeat the same motions many times after intervals of repose, all the muscles exercised become permanently developed; a perfection of action ensues in the member exercised, which it did not previously possess, any deformity by which it is affected is corrected, and strength and activity are acquired. That man, therefore, gains the most strength who engages in muscular exercises that require the application of much power, but which are sufficiently separated by intervals of repose.

It must be remembered, however, that in exercising particular muscles only the others become weak. The strength of Marshal Saxe was sufficiently great to stop a chariot drawn at speed by four horses, by merely seizing the wheel; he bent pieces of silver with his fingers, made them into boats as he would with paper, and presented them to the ladies. Count Orloff, a Russian general, broke the shoe of a carriage horse in the same manner; and there are innumerable examples of similar feats of extraordinary strength.

Active exercises, at the same time, confer beauty of form,

and they even contribute to impart an elegant air and graceful manners. If the exercise of a limb be continued for some time, the member swells, a painful sensation is experienced which is termed lassitude, and a difficulty of contraction, which is the result of it. If the motion has been excessive, and the organic elements in the member have been acted upon beyond all physiological laws, inflammation would take place, and its functions be performed with great difficulty, if at all.

Such are the effects of exercise on the locomotive system, to all the functions of animated beings, so long as they are exercised with moderation, equality, and at due intervals, working for their own preservation. Of course, the general effect of active exercises is marked in proportion to the number of parts that share in the motion, or are brought into energetic action. In general exercise the increase of organic action is not confined solely to the parts which are the seat of muscular contraction, but is repeated throughout all parts of the economy, and influences all the functions.

Thus, as to the vital or nutritive system, exercises taken when digestion is not going on excite the digestive faculty: taken during its progress, they disorder that function. The arterial and venous circulations become more rapid by active exercise, which concludes by giving greater force to the tissue of the heart. It is the same with respiration and calorification. The same takes place with regard to nutrition, a function which exercise increases, not only in the muscles in movement, as we have just seen, but also in the bones, ligaments, vessels and nerves.

By inducing cutaneous exhalation, it promotes the expulsion of injurious agents, produces a fresh color in persons who may have become pale through a sedentary life, and to a certain extent renders the human constitution, by means of habit, proof against the action of surrounding objects. The local effects of excessive action, or those which take place in the members themselves, are, as before observed, inflammation of the muscles.

Ancient writers inform us that it was a rare thing to meet with athletes who, having signalized themselves from their

earliest youth in gymnastic combats, were of so excellent a constitution as to be able, when they had reached a more advanced age, to acquire the same honors on contending for the prize with grown men. Aristotle assures us that amongst the conquerors in the Olympic games, not more than two or three at the most could be found to whom nature had granted such an advantage.

In relation to the mental or thinking system, "every movement," says Cabanis, "becomes in its turn the principle or occasion of new impressions, of which the frequent repetition and the varied character must increase more and more the circle of our judgments, or tend unceasingly to rectify them. It hence follows that labor, giving to this word the most general signification, cannot but have an influence infinitely useful on the habits of the understanding, and consequently also on those of the will." This argument is evidently applicable to varied exercise. On the contrary, "the great division of labor, so favorable to the perfecting of the arts, contracts more and more the understanding of workmen." Exercises, moreover, inspire confidence in difficult situations, and suggest resources in danger. Their consequent influence upon the moral conduct of man is such that, by a courage which is well founded, because it springs from a perfect knowledge of his own powers, he is often enabled to render the most important services to others.

Although the direct effect of exercise is not only to confer power on the muscular and other organs, but to multiply external impressions, and to occupy with them all the senses at once; still minds thus disposed, in general occupy themselves rather with objects of imagination and sentiment than with those which demand more complicated operation. The sense of muscular power impresses determinations which, carrying man perpetually out of himself, scarcely permit him to dwell upon impressions transmitted to his brain. The only action of that organ, during these exercises, seems to be limited to ordering the movements.

Hence, exercise, especially taken in the open air, amidst new and varied objects of sight, is not favorable to reflection

—to labors which demand the assemblage and concentration of all the powers of the mind. It is, on the contrary, in the absence of external impressions, that we become more capable of seizing many relations, and of following a long train of purely abstract reasoning. As life spent chiefly in active muscular exercises would leave in a state of repose those central organs that are subservient to the moral qualities and intellectual faculties, I agree with Seneca and Camper, in prescribing all such degrees of exercise as would exhaust the mind, and render men incapable of aptitude in science, polite literature, and art.

The cultivation of bodily strength, in preference to everything else, would establish only the right of the strongest, as it is found to exist in the organ of society. To cultivate the faculties of the mind exclusively would produce only the weakness of sentiment or excess of passion. There is for every individual a means of making all these dispositions act in harmony; and the due blending of physical and moral education alone can produce it. Let it be remembered that young persons will much more easily be withdrawn from the application they ought to pay to the study of the sciences, by insipid recreations and trifling games, than by the fatiguing exercises necessary for their development and the preservation of their health, which, however, habit soon renders easy and delightful. To what vices do not a sedentary life and the practice of gaming give rise?—whilst well-regulated exercises excite ambition to excel, and energy in the performance of every duty.

The philosophers of antiquity, such as Aristotle and Plato, regarded gymnastic exercises as of vast importance, and considered a state defective and badly organized where these exercises were not instituted. Colleges, called Gymnasia, were therefore established everywhere, and superintended by distinguished masters. Accordingly, the illustrious men of the Grecian and Roman republics, even those who shone in literature and the fine arts, received the same physical education. The gymnastic exercises which are here recommended are not intended to produce athletes, but to strengthen the human

constitution. One exercise gives solidity, another address; and we may even say that the various kinds of exercise are sometimes opposed to each other. The strongest peasant is far from being the best runner; and the most vigorous dancer would probably be deficient in strength. There is, however, a mean to be found in the disposition of every individual to preserve both skill and strength, and this is what ought to be sought. For this purpose, it will suffice young persons to practice a few hours every day, sometimes at one exercise, and sometimes at another.

GENERAL DIRECTIONS.

It only remains for us to give a few directions as to the time, place and circumstances of exercise. The best time for the elementary exercises is when the air is cool, as, even in summer, it is early in the morning, or after the sun has declined; and they should never immediately follow a meal. The best place for these elementary exercises is a smooth grass-plat, or a firm sandy sea-beach is good, or in the gymnasium with instructions. Chasms, stones, and stakes are always dangerous. At the commencement, the coat and all unnecessary clothes should be laid aside; and all hard or sharp things should be taken from the pockets of the remaining dress. A very light covering on the head is best; the shirt-collar should be open, the breast being either exposed or thinly covered; and the shoes should be thin soled.

Sudden changes are always bad; exercise should begin gently, and should terminate in the same manner. The left hand and arm being commonly weaker than the right, they should be exercised till they become as strong. The custom is advantageous, not only for all military and mechanical gymnastic exercises, but also for all their operations. The being cooled too quickly is injurious. Therefore, drinking when very hot, or lying down on the cold ground, should be carefully avoided. No exertion should be carried to excess, as that only exhausts and enfeebles the body. Therefore, whenever the athlete feels tired, or falls behind his usual mark, he should attend his body, then resume his clothes and walk

home. The moment exercise is finished, extra cloths should always be put on, and the usual precautions adopted to prevent taking cold.

In most exercises, a belt or cincture is of utility, and it seems, in all ages, to have been naturally employed. The weakest savage, who could not follow others in the course without panting, would find, by placing his hand over his abdomen, and supporting the liver and other organs which descend into that cavity, that he was aided in running, and breathed more easily, and hence he would make for himself a belt. United in societies, men would still preserve their belt, though it might not seem particularly advantageous, except to those whose active mode of life approached a primitive state, such as travelers, couriers and porters.

The Greeks put on their belts before they commenced wrestling; and many physicians, both ancient and modern, recommend the use of belts, as being to the whole of the body, and to the parts over which they are placed, what the exterior sheaths or aponeuroses are to the muscles—bands which embrace and keep firm the parts over which they are placed. The common belt has leathern straps and buckles to fasten it. A double cincture for wrestling forms a very strong girth, which is put on by pupils who are very strong, when they wrestle. These belts may be made of different sizes, for youths of different ages; from two to six inches for wrestlers. Their length is in proportion to the size of the person who uses them. These belts are very useful in strengthening the abdominal region, especially for all strength feats. Riders, also, should furnish themselves with belts before getting on horseback, to prevent too violent motion of the viscera of the abdomen, and the disorders which may result from it. The use, indeed, of belts will by degrees prove their utility, and they will probably be worn even externally, without reference to physical exercises. They deserve this the more, because they give an air of lightness and elegance to the shape, and develop the chest.

The most useful thing in existence is dangerous, if improperly applied. In very young persons the chest and abdomen have been compressed by fastening the belt too tight, or mak-

ing it too wide; and disorders of digestion and respiration have consequently been caused by pushing in the false ribs. This is an imprudence that should be avoided. If the belt be too low, it may press too much on the lower part of the belly; if too high, it may disorder the chest. It must therefore be placed on the loins, so as to pass just below the navel; and, as said before, it must not be too tight.

TRAINING.

The art of training for athletic exercises, or laborious exertions, consists in purifying the body and strengthening its powers by certain processes which are now to be described. The advantages of it, however, are not confined to pedestrians, wrestlers, or pugilists; they extend to every one: for, were training generally introduced, instead of medicine, for the prevention and cure of diseases, its beneficial consequence would assuredly prolong life and promote its happiness. Every physiologist knows that all the parts which compose the human body—solids as well as liquids—are successively absorbed and deposited. Hence ensues a perpetual renovation of them, regulated by the nature of our food and general habits. The health of all the parts and the soundness of their structure depend on this perpetual absorption and renovation. Now, nothing so effectually as exercise excites at once absorption and secretion. It accordingly promotes all the vital functions without hurrying them, renovates all the parts, and preserves them apt and fit for their offices.

It follows, then, that health, vigor, and activity chiefly depend upon exercise and regimen; or, in other words, upon the observance of those rules which constitute the theory of training: and, although not commonly resorted to as the means of restoring invalids to health, there is every reason to believe that it would prove effectual in curing many obstinate diseases, such as bilious complaints, obesity, gout, and rheumatism.

The ancients entertained this opinion. They were by no means unacquainted with or inattentive to these instruments

of medicine, although modern practitioners appear to have no idea of removing disease, or restoring health, but by pouring drugs into the stomach. Herodotus is said to have been the first who applied the exercises and regimen of the Gymnasium or outdoor exercise to the removal of disease, or the maintenance of health. Among the Romans, Asclepiades carried this so far that he is said, by Celsus, almost to have banished the use of internal remedies from his practice. He was the inventor of various modes of exercise and gestation in Rome. In his own person he afforded an excellent example of the wisdom of his rules and the propriety of his regimen. Pliny tells us that, in early life, he made a public profession that he would agree to forfeit all pretensions to the name of a physician should he ever suffer from sickness, or die but of old age; and, what is extraordinary, he fulfilled his promise, for he lived upwards of a century, and at last was killed by a fall down stairs.

Modern experience sufficiently proves that exercise is the most powerful strengthener of the muscles and of every part on which activity depends. In its operation on the vital system, training always appears to benefit the state of the lungs. Indeed, one of its most striking effects is to improve the wind: that is, to enable a man to draw a larger inspiration and to hold his breath longer. As to the intellectual system, Sir J. Sinclair observes that, by training, the mental faculties are also improved; the attention being more ready, and the perception more acute.

It must be admitted that the most beneficial consequences to general health arise from training. The simplicity of the rules for it is assuredly a great recommendation to a trial of the experiment. The whole process may be resolved into the following principles:—1st, the evacuating, which cleanses the stomach and intestines; 2d, the sweating, which takes off the superfluities of fat and humors; 3d, the daily course of exercise, which improves the wind and strengthens the muscles; and, lastly, the regimen, which nourishes and invigorates the body. To those who are to engage in corporeal exercises beyond their ordinary powers, it is indispensably

necessary. The issue of a contest will, at the hour of trial, in a great measure, depend upon relative condition, as effected by training.

Training was known to the ancients, who paid much attention to the means of augmenting corporeal vigor and activity. Accordingly, among the Greeks and Romans certain rules of exercise and regimen were prescribed to the candidates for gymnastic celebrity. We are assured that among the Greeks, previous to the solemn contests at the public games, the strictest temperance, sobriety, and regularity in living were indispensably requisite. The candidates were, at the same time, subjected to daily exercise in the Gymnasium, which continued during ten months, and which, with the prescribed regimen, constituted the preparatory training adopted by the athlete of Greece. Among the Romans, the exercises of the palaestra degenerated from the rank of a liberal art, and became a profession, which was embraced only by the lowest of mankind, the exhibitions of the gladiators being bloody and ferocious spectacles, which evinced the barbarous taste of the people. The combatants, however, were regularly trained by proper exercise and a strict observance of regimen.

Pure and salubrious air was deemed a chief requisite. Accordingly, the principal schools of their *athletæ* were established at Capua and Ravenna, the most healthy places in Italy; and previous to entering on this regimen the men were subjected to the evacuating process, by means of emetics, which they preferred to purgatives.

In the more early stages of training their diet consisted of dried figs, new cheese, and boiled grain. Afterwards animal food was introduced as a part of the athletic regimen, and pork was preferred to any other. Galen, indeed, asserts that pork contains more real nutriment than flesh of any other kind which is used as food by man. This fact, he adds, is decidedly proved by the example of the *athletæ*, who, if they live but for one day on any other kind of food, find their vigor manifestly impaired the next. The preference given to pork by the ancients, however, does not correspond with the practice of

modern trainers, who entirely reject it ; but in the manner of preparing the food they exactly agree—roasting or broiling being by both preferred to boiling, and bread unfermented to that prepared by leaven. A very small quantity of liquid was allowed to the athletæ, and this was principally water. They exercised in the open air, and became familiarized by habit to every change of the weather, the vicissitudes of which soon ceased to affect them.

To exercise their patience, and accustom them to bear pain without flinching, they were occasionally flogged on the back with the branches of a kind of rhododendron, till the blood flowed. By diminishing the quantity of the circulating liquid, this rough kind of cupping was also considered salutary, as obviating the tendency to plethora or redundancy of blood, to which they were peculiarly liable—a proof, if true, of the nourishing qualities of their food.

When the daily exercises of the athletæ were finished, they were refreshed by immersion in a tepid bath, where the perspiration and sordes—scurf, pustules, or filthy adhesions—were carefully removed from the surface of the body by the use of the brush.* The skin was then diligently rubbed dry, and again anointed with alcohol and oil. If thirsty, they were permitted to drink a small quantity of water. They then took their principal repast, after which they used no more exercise that day. They occasionally also went into the cold bath in the morning. They were permitted to sleep as many hours as they chose ; and great increase of vigor, as well as of bulk, was supposed to be derived from long-continued and sound repose.† The sexual intercourse was strictly prohibited.

The manner of training among the ancients bears some resemblance to that practiced by the moderns. Perhaps it is because their mode of living and general habits were somewhat different from those of the present age that a difference of treatment is now required to produce the same effects. The

* For this instrument rough coarse cloths are adopted.

† Little rest is now prescribed ; but its quantity should depend upon circumstances of fatigue, etc.

great object of training for running or boxing matches is to increase the muscular strength and to improve the free action of the blood and lungs, or wind, of the person subjected to the process. Seeing that the human body is so capable of being altered and renovated, it is not surprising that the art of training should be carried to a degree of perfection almost incredible; and that, by certain processes, the muscular power, the breath (or wind), and the courage of man should be so greatly improved as to enable him to perform the most severe or laborious undertakings.

That such effects have been produced is unquestionable: they are fully exemplified in the astonishing exploits of our most celebrated pedestrians and pugilists, which are the infallible results of such preparatory discipline. The skilful trainer attends to the state of the bowels, the lungs, and the skin; and he uses such means as will reduce the fat, and at the same time invigorate the muscular fiber. The patient is purged by drastic medicines; he is sweated by walking under a load of clothes, and by lying between feather beds; and his limbs are roughly rubbed. His diet is beef or mutton, light wine, ale and water—amount about thirty ounces per day. He is gradually inured to exercise, by repeated trials in walking and running. By extenuating the fat, emptying the cellular substance, hardening the muscular fiber, and improving the breath, a man of the ordinary frame may be made to fight for one hour or more, with the utmost exertion of strength and courage, or to go over one hundred miles in twenty-four hours.

The trainer, before he proceeds to apply his theory, should make himself acquainted with the constitution and habits of his patient, that he may be able to judge how far he can, with safety, carry on the different parts of the process. The nature of the patient's disposition should also be known, that every cause of irritation may be avoided; for, as it requires great patience and perseverance to undergo training, every expedient to soothe and encourage the mind should be adopted.

The skilful trainer will, moreover, constantly study the progress of his art, by observing the effect of its process,

separately and in combination. If a man retain his health and spirits during the process, improve in wind, and increase in strength, it is certain that the object aimed at will be obtained ; but, if otherwise, it is to be apprehended that some defect exists, through the unskilfulness or mismanagement of the trainer, which ought instantly to be remedied by such alterations as the circumstances of the case may demand. It is evident, therefore, that in many instances the trainer must be guided by his judgment, and that no fixed rules of management can, with absolute certainty, be depended upon for producing an invariable and determinate result. In general, however, it may be calculated that the known rules are adequate to the purpose, if the pedestrian strictly adhere to them and the trainer bestow a moderate degree of attention to his state and condition during the progress of training.

It is impossible to fix any precise period for the completion of the training process, as it depends upon the previous condition of the pedestrian ; but from six weeks to two months, in most cases, will be sufficient, especially if he be in tolerable condition at the commencement, and possessed of sufficient perseverance and courage to submit cheerfully to the privations and hardships to which he must unavoidably be subjected. The criterion by which it may be known whether a man is in good condition—or, what is the same thing, whether he has been properly trained—is the state of the skin, which becomes smooth, elastic and well-colored, or transparent. The flesh is also firm, and the person trained feels himself light and full of spirits. In the progress of the training his condition may also be ascertained by the effect of the sweats, which cease to reduce his weight; and by the manner in which he performs one mile at the top of his speed. It is as difficult to run a mile at the top of one's speed as to walk a hundred : and therefore, if he performs this short distance well, it may be concluded that his condition is perfect, or that he has derived all the advantages which can possibly result from the training process.

COMPARATIVE STRENGTH OF DIFFERENT RACES.

A few words may be here added on the comparative strength of different races of men. In order to procure some exact results on this point, Peron took with him on his voyage an instrument called a dynamometer, so constructed as to indicate on a dial-plate the relative force of individuals submitted to experiment. He directed his attention to the strength of the arms and of the loins, making trial with several individuals of each of the races among whom he then was, viz., twelve natives of Van Diemen's Land, seventeen of New Holland, fifty-six of the Island of Timor, seventeen Frenchmen belonging to the expedition, and fourteen Englishmen in the colony of New South Wales. The following numbers express the mean result in each case:

	Strength of the Arms. Kilogrammes.	Strength of the Loins. Myriagrammes.
1. Van Diemen's Land	50.6	
2. New Holland	50.8	10.2
3. Timor	58.7	11.6
4. French	69.2	15.2
5. English	71.4	16.3

The highest numbers in the first and second class were, respectively, 60 and 62; the lowest in the English trials 63, and the highest 33, for the strength of the arms. In the power of the loins, the highest among the New Hollanders was 13; the lowest of the English 12.7, and the highest 21.3. "These results," observes Mr. Lawrencee, "offer the best answer to declamations on the degeneracy of civilized man. The attribute of superior physical strength, so boldly assumed by the eulogists of the savage state, has never been questioned or doubted. Although we have been consoled for this supposed inferiority by an enumeration of the many precious benefits derived from civilization, it has always been felt as a somewhat degrading disadvantage. Bodily strength is a concomitant of good health, which is produced and supported by a regular supply of wholesome and nutritious food, and by active occupation. The industrious and well-fed middle classes of a civilized community may, therefore, be reasonably expected

to surpass, in this endowment, the miserable savages, who are never well-fed, and too frequently depressed by absolute want and all other privations.

POSITION.

Before entering into a detail of exercise, it is necessary to attend to what is termed position. A standing position is the action by which we keep ourselves up. Indeed, this state, in which the body appears in repose, is itself an exercise, for it consists in a continued effort of many muscles; and the explanation we shall give of it will much facilitate that of walking.

Everyone has observed that during sleep, or a fainting fit, the head inclines forward and falls upon the breast. In this case it is in accordance with the laws of gravity; for the head, resting on the vertebrae which support it at a point of its basis which is nearer the posterior than anterior part, cannot remain in an upright position in standing, except by an effort of the muscles at the back of the neck: it is the cessation of this effort that causes it to fall forward. The body also is unable to remain straight without fatigue. The vertebral column being placed behind, all the viscera or parts contained by the chest and belly are suspended in front of it, and would force it to bend forward unless strong muscular fibers held it back. A proof of this may be seen in pregnant and dropsical women, who are compelled, in consequence of the anterior part of the body being heavier than usual, to keep the vertebral column more fixed, and even thrown backward. The same observation may be made with regard to the pelvis, basin, or lowest part of the trunk, which by its conformation would bend upon the thighs, if not kept back by the great mass of muscular fibers that form the hips. In front of the thighs, again, are the muscles, which, by keeping the kneepan in position, are the means of preventing the leg from bending. Lastly, the muscles forming the calves, by contracting, are the means of preventing the leg from bending upon the foot.

And I may state here, that I will take any person paralyzed from head to foot, and make them stand on their feet, and

have done so by a process of only binding the knees, trunks and abdomen to a board behind them.

Such is the general mechanism of the standing position. It is, therefore, as we observed, a concurrence of efforts; almost all the extending muscles are in a state of contraction all the time that this position is maintained, and the consequence is, a fatigue which cannot be endured for any great length of time. Hence we see persons in a standing position rest the weight of their body, first on one foot, then on another, for the purpose of procuring momentary ease to certain muscles. For this reason, also, standing still is more fatiguing than walking, in which the muscles are alternately contracted and extended.

A question of importance on this subject is, what position of the feet affords the greatest solidity in standing? We will not enter into a detail of the numerous controversies by which some have defended or repudiated the position with the toes turned forward or outward: it will be sufficient to state the fact, that the larger the base of support the firmer and more solid will the position be, and to adopt, as a *fundamental* one, the military position, which has been found practically the best by those who have nothing else to do but to walk. The equal squareness of the shoulders and body to the front is the first great principle of position. The heels must be in a line, and closed; the knees straight; the toes turned out, with the feet forming an angle of sixty degrees; the arms hanging close to the body; the elbows turned in, and close to the sides; the hands open to the front, with the view of preserving the elbow in the position above described; the little fingers lightly touching the clothing of the limbs, with the thumb close to the forefinger; the belly rather drawn in, and the breast advanced, but without constraint; the body upright, but inclining forward, so that the weight of it may principally bear upon the fore part of the feet; the head erect, and the eyes straight to the front (as in Fig. 116, page 188).

To these brief directions I must add, that, in standing, the whole figure should be in such a position that the ear, shoulder, haunch, knee, and ankle are all in a line; that it must be

stretched as much as possible, by raising the back of the head, drawing in the chin, straightening the spine, rising on the hips, and extending the legs; that the object of keeping the back thus straight is to allow of standing longer without fatigue; that it is important to expand the chest, and to throw the shoulders back, with the shoulder-blades or scapulae quite flat behind; and that though in military instructions the body is thus inclined forward in standing without arms, yet when these are assumed the body is immediately thrown about two inches backward, into a nearly perpendicular position. This position, therefore, will be modified in walking, and especially in ordinary walking; but it is an excellent fundamental position, and it cannot be too accurately acquired. Avoid advice from charlatans.

This is the amount of the drill-sergeant's instructions as to position, though this last part is omitted in the manual describing the Field Exercise and Evolutions of the Army.

There are some men who spring up—from where nobody knows—pretending to know a good deal about training, and who often do great injury by giving advice on what they know but little of. These harmful counselors have usually had transactions of some slight sort with a professional trainer or pedestrian, and having thus acquired a smattering of the art, put themselves forward as authorities on training; even going so far as to traduce their instructors and to boast of a greater knowledge of his business than he has himself, although the instructor may have devoted a lifetime to the profession. Their pretenses can, of course, impose on no one who is at all acquainted with the requisites and abilities of a scientific trainer. No professional would pay the slightest heed to their vagaries, nor should amateurs suffer themselves to be deluded by such false guides.

A good trainer must be a man of deep thought, some education, and a great deal of practical experience. The last-named qualification is particularly essential, as without it no athlete can have confidence in the correctness of his advice, or hope to meet the manifold requirements of his often difficult and trying position.

The first things to be considered when going into training are the state of the contestant's health, his present occupation and mode of living. The last should be changed gradually; an abrupt change from high living and little bodily labor to a course of plain food and hard work is often productive of the worst results with amateurs, especially it is not beneficial to change suddenly from one course of living to another diametrically opposite, though the mechanic, farmer, and others accustomed to manual labor, or the amateur who has trained before, would suffer least by such a change.

One who is taking his first lessons in training should bear in mind that the body being called upon to put forth greater exertion than it is in the ordinary course of one's daily pursuits, and hard work being demanded of muscles that are ordinarily but little exercised, the blood is forced through the arteries and their capillaries with unwonted force, and consequently it tends to be congested, not only at the extremities, but also at the surface of the entire body.* The blood is, in fact, driven to the ends of the capillaries with a force and in a volume that temporarily overtaxes their power for distributing it and the power of the venous capillaries for taking it up and carrying it into the veins. As a result the hands and feet present a swollen appearance; in a lesser degree there is sometimes congestion of the blood vessels of the head, producing a condition in many respects comparable to that produced by indulgence in alcoholic drink; but after awhile, and indeed very soon, the circulatory system adapts itself to the requirements of the case. To overcome this tendency to congestion, I enjoin on the man who begins a course of training nine days of steady work, with careful attention to whatever makes for the body's well-being.

*To show how the blood may be congested at the extremities by natural force and will power, I may recount a demonstration given by me some years ago in the presence of many physicians at Bellevue Hospital, New York. By swinging the arm round and round with great rapidity, I forced the blood through the pores of the hand; with the other hand I swept it off, and the quantity of blood that oozed out was quite considerable. The experiment of course produced some swelling of the arm and distention of the blood vessels: but that condition soon disappeared and I suffered no consequent inconvenience.

Another symptom which sometimes alarms beginners of a course of training is the swelling of the limbs; but there is no danger unless the exercise that produces it is carried to excess.

If there is excessive exertion while the blood is in bad condition, abscesses and sores may result. When such a state of things is threatened, recourse is to be had to Turkish baths, to purgative medicines, and to the employment of dilute ammonia water for the skin, by these stimulating and arousing to vigorous action the whole excretory system. (See LOTION. See also page 66 for an account of the production of sores by force of circulation.)

After nine days of regulated exercise the capillary vessels are able to respond to all the demands made upon them by the increased force and frequency of the heart's action, and there is no longer either congestion or swelling.

Then should follow nine days of exercise for strengthening the muscles, regulating the action of internal parts, and bringing out the strong and the weak points of the feet.

In the third nine-day period, the man under training, provided he takes good care of himself and avoids over-fatigue, can come down to fine work, the tendons being now supple, the muscles ready to respond to every demand, the arteries and veins capable of conveying in an even flow the blood as it courses through the system, and all superfluous adipose having been disposed of by exercise and dieting; while all the organs are working in unison.

RUNNING.

The first lesson a runner has to learn is how to "nurse" himself, that is, how to economize his forces, by refraining as far as possible from unnecessary and excessive movements of the body. Movements of the trunk tax the muscles of the loins and impede the action of the legs; needless movements of the head tend to distract the attention of the runner; and those of the arms simply involve a wasteful expenditure of force: all this disordered action drives the head wild. You see

examples of this in the work of novices: the head ever changing its posture, the arms swaying violently, the trunk twisting itself in the effort to outrun the legs, and the legs themselves thrown out in a variety of angles. To say nothing of the absolute waste of energy implied in these disordered movements, the respiration is seriously impeded, and consequently the due aeration of the blood is hindered by the irregular action of the head and arms, and the endurance of the runner is impaired. Like a prancing horse, the man makes little headway. The arms should have a motion in harmony with the motion of the legs, for unless arms and legs work in unison, the propulsion of the body is impeded; but the arms should not be allowed to swing forward much beyond the thighs, except by a short distance runner.

The art of running has to be learned. For weeks, or for months, the beginner must learn how to run properly without regard to speed. In starting, the body is to be bent slightly forward, left arm up and out, right arm back. In bounding off the mark, let his first thought be, not about reaching at once his highest speed, but about the carriage of his body. The arms should be down and behind the body: this permits free expansion of the chest by relieving it of the weight of the arms. (For better lung inflation, see above.) It also saves the motion of the loins. The action of the legs must be uniform, so that the muscles operating the joints may have the same function to perform from the beginning of the race to the end, and not be obliged, with needless expenditure of nervous and muscular energy, to adapt themselves to the execution of a variety of irregular movements. Perfect as is the mechanism of the human frame, it works better and more smoothly when the task it has to perform is simply the repetition of identical movements than when the movements are changed from minute to minute: for one thing, the "oiling" of the machine—the supply of synovial fluid—is less likely to fail or to be deficient when the demand for it is constant and uniform than when it varies: hence, the more uniform the movements of the runner, the smoother and the easier is the action of his joints.

The action in a run of one mile is the same as in a run of five miles or ten miles, with the exception that in the longer runs a man should settle down to a steady gait and rest and nurse himself more. When in practice, a runner should try to breathe through the nostrils, and to snort like the race-horse. When he has acquired this faculty of nasal respiration on the practice ground, he can employ it when he is competing as much as he can. It is, in fact, the proper way of breathing, but very few employ it, nor do mothers teach their children to breathe through the nostrils, whether sleeping or awake. Our Indians invariably use this mode of respiration: hence they have such large nostrils; hence, too, they are less subject than we to lung diseases. Air inhaled through the nasal passage is strained of floating particles, and is assimilated to the body's temperature before it enters the lungs: thus two causes of throat and lung troubles—cold and the introduction of irritant particles—are obviated.

If one wishes to attain some proficiency in running without subjecting himself to the stern discipline of the trainer, let him, in the intervals of his business duties or of his studies, as the case may be, avail himself of every opportunity that presents itself of taking a run over any unobstructed stretch of roadway that may offer itself, across the road or anywhere else, always regulating the movements of the legs and the carriage of the body according to the directions for running prescribed for beginners and for proficients in their practice work. Let him take his practice trials just the same.

A man in training to run a mile may run one-half or three-quarters of a mile (not more) if living near the track, not otherwise, at an easy gait before breakfast. He should then take either a towel-bath or a light shower-bath. If the water is cold, just wet the body, one arm first, then the other, then one leg, and afterwards the other, next the head and finally the trunk. After the bath, an attendant should rub the man's body dry without delay, giving special care to the feet and to the toes where their surfaces come into contact. This rubbing and drying is a most important operation and should be performed with scrupulous care; especially after the afternoon trial, which,

as the time of the race draws near, is the hardest task of the day. The attendant who does the rubbing should have the whole surface of his hand in close contact with the man's body; thus the "flow of magnetism" (as trainers not inaptly style the more than merely mechanical effect of thorough and skillful rubbing) will be unimpeded and continuous.

When undergoing the operation of rubbing, during the first part of it the man may be in the standing posture. Then the attendant with both hands rubs the man's arms, then his body, down the back and front, on the chest and abdomen, then the small of the back, around the loins, the posterior muscles and the thighs, back and front at the same time, always pressing each hand toward the centre and downward. Then, with the man reclining his back upon a couch, the attendant, with both hands, at first rubs from the thigh down to the foot in one stroke, then from thigh to knee and along the shin, then with one hand after the other down the sides of the legs, and last the foot: this, as said before, with the whole surface of his hand, and not, as many do, with the tips of the fingers, one after the other. Then he rubs the back of the legs, from the posterior muscles downward to the heel, in one sweep, bearing, with some pressure, on the muscles, but not so as to hurt. In this movement, let the "heel" of the hand follow the course of the arteries and of the main nerve, which is in the centre of the limb, in the front of the arm and the back of the leg. Finally, the man having risen from the couch, the whole body gets one light rub down front and back. By this process of rubbing the blood is forced through the arteries, and thence into the uttermost capillaries, carrying nutriment and vital force to every part. When a man is "in condition," his blood is dense, thick, rich in all the elements that go to the building up and repair of muscular tissue: all trainers know, or should know, that it is almost "as thick as mucilage" and as adhesive: the blood of a man not in condition, on the contrary, is thin. From all this, it is plain that the operation of rubbing is of very high importance in the training of a runner. Lotion should not be applied without a previous good rubbing of the body, one side at a time. Always apply the lotion to

the back first, for that is the part that is used the most to propel the body—a fact which but few trainers know. Be careful to keep your body guarded against chill, and to have abundance of pure air for the lungs. A trainer must be kind and forbearing with his man, and strive to keep him always in good humor and satisfied, especially just before the race, when a man is likely to be fretful. If it becomes necessary to correct him while he is in this mood, do it with all gentleness, for he is wrought up to a high pitch and easily irritated.

On the third day or even the second day before the race, the man may make a trial run, but anything like a decisive trial should not be attempted. A man may have just a little spin in the morning of the race—say two starts, and a little run around the track: this, if he has his quarters on the track grounds; but if he has to go any distance to the track, he will better husband his strength.

After the rubbing, put the man's clothes on immediately, and see that each article of dress is rightly adjusted. First put the shirt on, then the breeches. I have devised a plan for attaching a suspensory to the breeches, and then securing it by a band about the waist: thus the suspensory can be worn without the least discomfort. In putting the pusher on the long side up, be sure there is no wrinkle in it and that it is well on. Pull the toes apart and place them properly. In putting on the shoe, take care to have the tongue pulled straight. All these little things go towards winning the race. The lace of the shoe should be of thick wax-end, or of strong linen fish line, not silk, be sure. When your man is about to go to the mark be sure to have plenty of company around him to divert his mind from thinking too anxiously about his race, thus saving his nerve force for the contest, and send him off in a pleasant state, and before he begins to think of himself he will have run considerable distance.

On the day of the race, before it is run, he should, if possible, be restricted to one meal, though if he works through the day, he must have two meals. Let him sleep late on the morning of the race day. For the three nights preceding the race, never let your man be out of your sight, even for a

moment, if possible. If he works day and evening, and feels hungry outside of meal-times, give him a little of the following mixture, say, one-half wineglassful (in case he is an abstainer from spirituous liquors, add only a few teaspoonfuls of sherry and an infusion of mixed green and black tea), mixed as follows: one-half pint of sherry, white four eggs, one small package of saffron. Simmer for one-half hour in one-half pint of water; then add sherry and eggs, not till cold, squeezed and strained. Administer in small quantities at a time when going to the race. In dieting, I don't mind a piece of pie, such as cranberry, apple, damson or strawberry, not sweet and without much crust, to those that are not fat or inclined to take on fat. For other information on diet, see diet list. Lemon juice occasionally after meals, to the fat man, especially after a rich meal.

LOTIONS.

For the fat man—Ammonia, white wine vinegar, alcohol and distilled water, equal parts.

In applying the lotion keep clear of the privates, the back of the knee-joints and between the toes.

For chafing—Small spoonful of pulverized citric acid, six oz. mutton tallow, one oz. spermaceti, heat and mix well.

For pain—One-quarter chloroform, one-quarter ammonia, one-eighth camphor, one-eighth olive oil, one-eighth oil of spike, one-eighth oil of origanum. For excessive pain, leave out the oil, add more ammonia and a spoonful of cayenne pepper. This can be used on the knuckles, or on the commencement of training, to take away soreness. Not to be applied around the privates or to any part that is likely to chafe.

Lotion for the thin man: One-half alcohol, one-eighth pure olive oil, one-eighth tincture of capsicum, one-eighth chloroform, one-eighth spirits of camphor.

The investing of the body with fit and proper clothing is a matter of no secondary importance, whether it be a question of running or of street costume, of the attire of a trainer or of a business man. In the case of the runner, his drawers should fit snugly around the waist.

See that your mouth is kept clean and that your bowels are kept open in the natural way, by proper dieting—by fruit and vegetables, not by drugs.

Rub the body and then take a towel or shower bath, and after a little exercise to create reaction, kick out with the legs, raising and landing on the forepart of the feet. Take a trot, if it is only around your room, and always act sleepy on retiring. A good rub before arising by a good man will benefit you.

HOW TO MAKE RUNNING SHOES.

See that the first sole is stiff and good under the spikes. A good piece of cork should be put under the spikes and its edges shaved down very thin along the line of the stitches that hold the outer and inner soles together. This cork forms a bed for the spikes. To make it doubly sure, a piece of canvas should be laid over the spikes to prevent them from cutting the cork. Furthermore, the two soles should be held firmly together by a line of stitches through the centre between the spikes. Good horse-hide is as good a leather as you can get: it has but little stretch, and holds the foot without yielding, when once you have got a fit; and have the shoe made as light as possible.*

To procure the proper shoe be sure to strike headquarters.

*Here I would remark that a trainer must observe as closely the action of his man when he is "off" as when he is at his best : the knowledge so acquired enables him to foresee and to provide in time against untoward contingencies. Let the trainer look carefully after the runner's feet. Evening and morning they should be washed in cold water ; the reaction is highly beneficial—it seems to give tone to the whole system. The feet should never be allowed to become cold, especially at the time of the race. If they do become so, then with warm hands rub them well and rapidly, engaging the help of another person if possible. Rub downward toward the end of the toes till they are warm ; cuddle the body and legs up well, and move the man around as soon as you can. A good jockey knows this. See how he keeps his horse blanketed, rubs him, cares for him, feeds him well, and usually sleeps with him the night before the race. So must you do with your man.

PROPER DRESSING.

His shoes must be easy, not a hair's-breadth too wide or too narrow: it must be impossible for them when laced to chafe the feet at any point. The business man may wear suspenders and a belt too, or a belt for a short time and suspenders for a long time: but he must change from the one to the other occasionally, in order to relieve the muscles, nerves and blood vessels from the effects of the pressure exerted upon them by those articles of attire. Clothing that prevents free play of the muscles or that interferes with the free circulation of the blood should not be worn—no stiff-starched shirt bosoms, no chest-constricting undershirt or vest or coat, no gaiter-shoes with elastic web spring compressing the veins and arteries of the feet.

SELF-TREATMENT.

I will outline here a course of self-treatment, from arising in the morning to retiring at night, for professional and amateur.

One's actions in the morning must depend somewhat on the climate of the place he is in. If in a part of the country where fever and ague are prevalent, it is well, if the atmosphere is not dry when you arise, which should be about 7 A.M. in winter and 6 A.M. in summer, to close the windows, then proceed with your toilet. Cleanse the teeth thoroughly; after which, if in dread of catching the fever, take a spoonful, not more, of whiskey or brandy, with or without an equal quantity of water. If you have no signs and no fear of the disease, this dose is best let alone. Its use is decidedly contrary to the strict rules of training. Nevertheless, the liquor is an admirable preventive, and it is certainly much better to keep clear of the ague than to first catch and then try—perhaps vainly—to cure it.

Bathing should be conducted according to the state of the weather. If in a malarial climate be careful with the use of water in every way. If fine, take a bath; if damp, wet a

towel in cold water and ring it out, going over the body quickly. Follow with a good dry rubbing, it is better. Bathe in the river in summer, and after the sun is out.

If in a climate where there is no danger of ague, you may bathe freely after returning from any heavy exercise; if indoors, you add occasionally a handful of salt to your water, and use a little alcohol or bay rum on the skin after bathing. A bath may be taken in or out of doors if warm enough. In the sea in summer it is very refreshing—15 to 25 minutes in the water is long enough, and too long for a slim person. Never stay in long enough to get a chill. On going in, wet the body all over with the hands, especially the back of the neck. All bathing becomes a pleasure if done properly, and benefits the body. A slim person should dash in and splash around in the water and out again. If not bathing the whole of the body be sure and bathe the back of the neck, down the shoulder, arms and feet.

The hardest part of the day's work should be done at about the time your contest may come off, if possible. Exercise at thefeat you are training for, if it be convenient, or at something similar. A pleasant walk for two or three miles before breakfast is good. You should not work hard enough, however, to cause perspiration before breakfast, and a rest is necessary before eating either meal.

At breakfast food should always be plain, and not more than two or three kinds—such as plain meat, mutton or beef-steak broiled, cold or warm chicken, eggs, with brown or white stale bread. A little oatmeal, rice, wheaten grits or fruit may be added; and only 4 and 6 ounces of liquid for medium-sized man should be allowed, and that only to be taken after or at the end of the meal,—weak tea or coffee, mixed tea is best. See diet table.

BREAKFAST.

In the following table will be found several different breakfasts, enough for every day of the week:

No. 1.—Steak and rice, not much seasoning; one apple, green-

ing the best ; stale bread ; tea, not too strong, no milk, one piece sugar.

No. 2.—Three or four eggs broken up in glass, with a piece of toast or bread ; some cold chicken ; celery, watercress, or radishes, eaten with one inch of green tops on.

No. 3.—Whole wheat boiled, with no sugar ; cold roast mutton or beef, with whole raw tomatoes ; apple sauce, prunes, raspberries, strawberries or peaches, not more than a small saucerful of any ; cup of tea.

No. 4.—A good piece of loin steak, broiled, with eggs broken on it ; Boston brown bread, and pear, orange, apple or any of the fruits mentioned in diet table.

No. 5.—Fish and egg sauce, any mentioned in diet table, boiled or broiled ; can be eaten with rice, or the rice may be eaten with apple sauce ; bread ; tea not strong, no milk, little sugar.

No. 6.—Raw meat chopped fine, with a little celery, young onions, and little seasoning ; put on ice ; when eaten, should be served very cold, with one or two soft-boiled eggs broken upon it. Cup of tea, no milk, and little sugar ; and juicy apple, greening preferred. Cold roast or boiled mutton with stewed tomatoes ; toast ; coffee not strong, no milk.

No. 7.—Cold boiled pig's feet, and rice mixed with apple sauce ; plenty of bread, no butter, and glass of good country cider.

No. 8.—Pot-stewed beef or mutton with little gravy ; rice boiled separate ; must be leg of mutton ; porterhouse steak, or good sirloin steak ; meat stewed with onions if they agree with you, or a baked onion.

The mouth should be well rinsed after each meal, and always rest after eating, and pick the teeth, to get out the small particles that may have lodged between them. This aids in keeping away thirst, which, for a stout man, is about the greatest hardship to contend against in training.

The best time to attend to the necessities of nature is after breakfast, and at other times when nature prompts.

A person should commence his next exercise in an easy way ; after breakfast say a walk of from six to eight miles, or the distance should be allotted according to the other work

he has to do at thefeat he is training for, or according to the strength of the person. The body should be well exercised between breakfast and dinner, and at the hour appointed for the contest, unless you should work less in order to save your strength for a special test day. These details should all be arranged every morning after breakfast, before going out, taking into consideration the state of your feelings both at the time and while progressing with your day's work.

In the hot weather while on the road, bathing the feet, wrists, head, and washing out the mouth is good, but drinks must not be indulged in, especially when out in the hot sun. Wearing heavy shoes was a practice of olden times, but it is not adhered to at the present day.

After returning from your work, between breakfast and dinner, a bath should always be taken, if you have perspired much. Salt water may be used on the body after bathing in fresh, as it restores the tone of the skin (see directions on bathing, page 90); bay rum or spirits may be used in its stead. Plenty of rubbing, with a good rest, is in order before dinner, which meal should be in the middle of the day, and should be composed mostly of plain food, such as either of the following meats: roast beef, baked beef, broiled beefsteak (sirloin is the best, porterhouse next), roast mutton, boiled mutton and caper sauce; broiled mutton or lamb chop off the leg is the best, as it contains more sinews than the beef mentioned, which will add a like substance to the body; eggs are good, though not to excess.

Chicken, broiled or roast (leg best); turkey broiled or roast; ditto fish in moderation; vegetables: avoiding squash, cucumbers, carrots, parsnips, and boiled cabbage, especially if white; greens, green in color, may be eaten; or a little raw cabbage with little vinegar; no potatoes. All hard vegetables are the best, such as rice, peas, beans, and maccaroni, with plenty of stale bread. Green corn may be eaten without much seasoning, providing they all agree with you. Stout persons should avoid all mixed dishes, stews, soups, potatoes, pies and puddings; not much butter, none on meats or vegetables; sugar and condiments of all kinds; pepper, spices, salt, etc.

milk, water, beer, ale or porter ; and, if possible, always avoid drinking until after eating, unless very thirsty ; then a little drink before eating will do no harm ; then rinse and wash the teeth. After dinner a rest of about thirty minutes is necessary. The afternoon's work is laid out differently from that of the morning. A walk or other exercise to keep the mind and body occupied, until you are ready to test yourself at the feat you are training for, if to come off in the afternoon, returning home between 5 and 6 P.M. Rub down and wash. Then if possible seek some pleasant company for an hour or so.

The supper, which should be of light food mentioned (see diet table), with a cup of tea, no milk, and a little sugar. A rest, then a walk, say from two to three miles, or some amusement to occupy the body and mind after this meal is good, retiring about 9 P.M. Always encourage a feeling of drowsiness on going to bed, and endeavor to fall asleep as soon as possible.

The amateur may have to go to college or business, and while there should take as good care of himself as possible. Upon reaching home, or before he commences practicing at that he is training for, if possible, he should wash his hands and face well, as it refreshes and gives him a feeling of new life, and prepares him for the task.

When training be careful not to overexert the body. A person cannot study much and train hard at the same time, as he becomes peevish in training, as the horse. A young gentleman studying for two hours in the morning and two hours in the afternoon or working at the desk an hour longer, may train one hour in the morning and two in the afternoon. The evening should be occupied by some amusing moderate bodily exercise, that will bring into play the muscles he is about to test. Should a man in training be permitted to remain idle after supper, the great flow of life that accumulates so quickly is liable to be spent in committing some act of indiscretion, and thereby waste that power he had been at such pains and trouble to gain. A self-trained man requires to have much self-will to become an expert, and he should keep the

feat he is training for continually before him when practicing, and at times act as if he were in his actual contest. This will nerve him up. The proper time to do this is about the time he intends to compete, and not after supper, as it is liable to work him up so that he will not have time to quiet down before retiring; in consequence of which he is likely to think of it in bed, which will disturb his rest, and take away a portion of his recuperative powers.

A person should be weighed not only at the commencement of training, but three or four times a week during the period of training, to guide you how to feed and work him.

A fighter should take a good run twice a day. The best time for this is when coming in from the morning's or afternoon's work. He should rise from 5 to 7 A.M., according to the weather and the amount of work done the day before. As between slim and stout men, the latter should rise the earlier. The regular round of exercises must be considerably reduced a day or two before the contest, to gain full strength.

A man might practice every day, if possible, at what he is about to compete in; if for sparring, he should spar; if for running, he should run; if for walking, he should walk; if for jumping, he should jump, and so on. It is no use doing as the various college crews do; go through all sorts of exercises to learn to row, or to develop the muscles they will use in rowing. Neither should you exercise for jumping when learning to run, or run to learn to jump, nor walk to run, etc. But practice at what you are to compete in over and over again, until you are sure you have got it perfect. Fighters, as a rule, are the most ignorant. Many think because they are going to fight they need not practice, whereas if they had done so they would not only have won the fight, laurels and money, but a reputation which would make them money thereafter. If you don't want to lose weight, dress in light clothing; if you do, put a flannel around your stomach and neck, and heavy flannels or sweaters on; to sweat the face, put a comforter well up around the chin and neck, or a flannel mask on, though not very pleasant. As an after-note I wish you to remember that the feet should be very particu-

larily taken care of, in between the toes especially, and the shoes made to fit, the socks good, and put on without a crease, and always the inside out and the shoes not laced too tight.

In training to walk: when out for your daily exercise you should practice the motion of leaping from the heel of one foot to the heel of the other, at times during the walk when feeling like doing so, keeping the body perfectly upright, if anything, the head behind the body, and try to get into an easy, continuous motion with the whole body, which should be loose; and you should keep thinking of the arms and legs, remembering that the faster the arms go, the faster the legs must go, keeping the stride as long as possible without straining. The amount of speed you can put on must be found out by practicing the speed allowance at the distance you are to compete in. You should walk your distance once every day, if possible, speeding at times as though in a race, and at the last eighth of the distance as fast as you can without completely exhausting yourself. This should be done in the afternoon, or at the time you are likely to compete.

In running he should do the same. If for 100 yards, continually practicing, running out two or three times during his practice per day at top speed. If at 220 yards, practice starting and run out two or three times. If at 440 yards, starting and running out once or twice per day. If at 880 yards, you may run the distance once or twice, with half hour's rest, in between. If for 1,000 yards, a mile, or a mile and a half, running out once is sufficient, with intermediate running with others. This rule also holds good for every distance up to ten miles, but not at top speed, which should be attempted not oftener than once or twice a week. So with all other distances.

I believe a person should do all he can in a day's work to test himself at the feat he is training for. Thus, a man training for a six-days' walk should walk all day. Of course, the above conditions are meant for a man not ailing, but you *must* always look out for schemers—those wishing to loaf or go off about business they have no right to. Skipping indoors when raining is good exercise if you cannot run. If practicing for

jumping, hurdle-racing, or any other contest, he should work continuously at it, and not dissipate, or he will never be an expert or develop his utmost abilities.

COLLEGE TRAINING.

Here I shall give a course of training in rowing to college students, with some deep thought, and I think, if they would follow my advice they would improve in strength where they need it, thereby enabling themselves to make the boat go faster without so much exhaustion, or likelihood of strain or total collapse.

My ideas for choosing a crew : You first take into consideration the size a man ought to be; the next and particular point is the determination or pluck of a man ; the next and serious point is his parentage, their health and strength, being very particular to find out if they were diseased ; what the disease was ; if before the applicant's birth or after ; if heart, lung, or any bad blood disease, the person should be most assuredly barred out. The disease may be found out by ascertaining from their family physician or older relations. They should be over eighteen years of age. The next thing is the proper build ; a good oarsman should be evenly built, as his power is required to be central. This I find out by letting a man sit down on a low chair, then follow out the bend from the groins, then letting him stand up—that is if he is muscular ; if he is not it is easy to find out the joint in his hip where the knuckle fits into the cup of the pelvis, measuring, in his bare feet, from the heel of his foot to the hip joint, and from the hip joint to the crown of his head. To be of good build he may measure about three inches more from the sole of the foot to the hip joint than he does from the hip joint to the crown of the head. If he is more to the extreme than this he is an unlikely oarsman, as he is either too long in body or legs, and one part will give out before the other.

And if you have a weak man in a boat when rowing a race, you had better throw or have him jump overboard when his power gives out, that is if he can swim.

If you are not sure when taking the above measures, have a surgeon take them for you.

Next, you test your men at work and *note* their actions. A man who can work well is generally good, although he may be playful. Put him at the work you are training him for, and keep him at it. If for rowing, on the machine, and then at other light work, say running for 10 minutes; then let them walk steady for 4 minutes, then give them dipping with dumb-bells for 4 minutes, say 3-lb. bell. Position: Body erect, bell in hand, wrists crossing each other, feet 3 inches apart, toes turned out to an angle of 45 degrees. From this position bend down and come as near as you can to the floor with your hands, without straining, at the same time bending knees as in a boat, returning back into first position, and so on; continue passing the head well back, every time you stand up. Next inflate the lungs well and slap the chest while holding the head well back. Then a little fun at any light work. Those wishing to row again on the machines can do so, but not for long, as the muscles must not be made sore; an hour of constant work is sufficient; rub down and then let the boys go home. You should caution them not to work heavily at any other exercise, and they should retire before 10 P.M., and if they sleep well 8 to 9 hours is sufficient for sleeping. See remarks on a good rub-down in the morning, bathing and other training. What to avoid when eating: Too much milk, butter, fat, sugar, salt, pepper; no water-melon, little musk-melon, no hash or stew to excess; not more than one cup of tea or cocoa, not too strong or sweet; no figs, or sweets of any kind. For breakfast see list.

Go through the same exercise every afternoon for nine days, and some in the morning if you can; then the exercise may be increased at the discretion of the instructor, and each man should be asked privately how the exercise affects him every day at first; how he feels; and they should be paraded every morning before entering on their studies, to ascertain how they are, and if they have attended to the necessities of nature; what time they retired, how they have rested, and what they have eaten for breakfast, correcting the wrongs, if any. After the nine days are over a number may fall out, if not you can weed them out, using your judgment by their

work and actions, which will direct you who are the best; you can tell this very quickly, after they are through with their regular work every day, by their taking more exercise. This is the time to watch them, and note how they act, if strong or weak at their work, and choose them accordingly. After choosing the best you must keep them at work to see how they develop or turn out. Sometimes you will get deceived, as their will power may give out; thus you must keep sufficient in your class to choose from, always keeping two or three in waiting. The boys now should begin to feel better after their work and get more of it, rowing on the machines the time it will take for their race twice a day if possible, not too hard. A little exercise at sparring, pulley-weights from the floor-pulley, and a little extra running or jumping or spring-board will not hurt, but no class at other dumb-bell work, as I have seen them go through, or bar-work and other such exercise. A bath and a good rubbing is necessary after each exercise; no hot water or too cold; no skylarking after you get dressed, so as to bring forth sweat, as many a cold is caught this way, by going out in the wind and damp atmosphere. Protect yourself against cold and wind, and do not stand on corners talking. After 15, 20, or more days of the above ordinary work has been gone on with, they may go into a full course of training, as the tendons, flesh, capillaries and nerves should be in condition to do their work, with the better blood to lubricate the action in more arduous tests, supplying more for that which is continually being used up with the good food, which continues to furnish the blood with its contents that makes the machinery go so well.

If a man is over-stout a mild dose of medicine should be administered every other day for one week, when the exercise should be half the distance in walking or work. A Turkish bath is good at first to soften the skin and open the pores to let the sweat out. When commencing to row on the river is the time to look out for catching cold. The liquid from cocoa nibs is good before going out in the morning, if chilly, or if the person needs building up. Simmered for two or three hours, or that which boiling water has been put on and soaked all

night, is best for training, as it can be easily warmed. In the morning take a cupful before going out, not more than 5 oz. is allowed; no sugar, or a small quantity, if any. You will soon begin to like it this way. Don't do more than practice in the morning, no fast rowing under any consideration ; on returning, if the body is the least bit damp, change the clothing and hang the damp ones out to dry.

When going out in the morning have your sweaters on, and row for a while with them on till you are warm; then take them off and go over your regular course, easily rowing some distance afterward, slowly, to cool off. Then wash down if you feel like it and the weather permits ; anyway, wash your feet and have a good rub-down; gargle your throat and rinse your mouth, but don't drink much water. After this a little swim and fun around the boat-house for reaction will do you no harm if cold, being careful not to slip down and sprain your ankle or wrist; do nothing risky the last few days before the race. If you are at regular training all day, arise about 6 A.M., rub or bathe the body, no plunging in water; a little light exercise, such as striking out with the arms, and kicking out with the legs, striking down and up, then dress and take a walk and a short run occasionally during your tramp, which should be about two or three miles, as per state of road, out and return, or row in your boat. Change about according to practice required. This your captain or trainer should be the judge of. A little rest before breakfast is proper. For this meal see diet table on breakfasts. After breakfast rest 30 minutes, then a row of 10 to 12 miles; easy spurring at times will not hurt the boys, but get their muscles in trim, and give them a good morning's exercise. On returning have a good bath and rub-down, then a little fun before dinner, such as pitching quoits, playing tennis, catching baseball, etc., etc. (no hard throwing). Look out for those who sit around too much, as they are likely to catch cold, get stiff, or have some ailment.

DINNERS.

For dinner I shall lay out several, so that you may have

an idea of how they should be put together. What a dinner should be composed of, and how to eat it:

First.—Roast beef and rice, with a little gravy on, and one boiled onion, if it agrees with you ; dry, crusty or home-made bread. Liquids should not be drank until after you have eaten, nor be put on the table till the latter part of your meal ; then eight to twelve ounces is the allowance, according to size of the man. (See diet table.) Water, wine, tea or beer, if you are sure the latter is good ; or ale, if not too strong—beer preferred, as it is not so strong and is not liable to make one heavy and lazy. An apple or orange, or any of the fruits mentioned in the diet table, may be eaten after dinner, only in small quantities.

Second.—Boiled mutton and lima beans. I do not object to a little caper sauce, if without butter, or a little asparagus on commencing training, though if eating this two ounces of liquid should be deducted.

Third.—Roast chicken and either green peas or string beans ; a raw or sliced tomato, home-made bread a day old. At this meal you may drink cider, as it will aid the digestion of rich chicken.

Fourth.—Meat pie, not too well done, in which an onion may be cooked if agreeable to all ; raw beefsteak must be used ; little salt and pepper, and a little fat in crust and baking powder, and one who understands the making of it must be engaged. With this a little succotash may be eaten, with mixed wine and water, ale, beer, cider or water, as per allowance.

Fifth.—Sirloin or porterhouse steak, with vermicelli, boiled or baked, with cheese on top ; otherwise, for those who don't like it, beer, ale, wine or water, and greening apple, or apple sauce.

Sixth.—Roast mutton, green peas and raw tomatoes, bread and liquids as prescribed ; apple, rhubarb, or a little of some sharp-tasting fruit at the latter part of your meal.

Seventh.—Venison steak or stewed in a pot, with just enough liquid to moisten and cook peas, which are good with it, or rice and couple of boiled onions. Cider, white wine or

claret is best, as prescribed ; cranberries or apple sauce with it.

Eighth.—Turkey ; white beans, boiled, little salt, and mashed up. Cranberry or apple sauce, bread and liquid allowed. Many other dinners may be added from diet list.

Bananas you should seldom eat.

Lemons, cut up and stewed with apples, at either meal, are good if eaten moderately. Stew with a little sugar.

All fruit should be used carefully, especially the acidulous ; not partaking of too much at any one time of day or on two following days, as that which you eat on the second day is apt to create quick action of the bowels in consequence of what you have eaten on the first day, causing a clearing of the slimy substance from the stomach, making it easier for that taken on the second day to act. The same thing applies to greens eaten raw, and if this rule is not strictly adhered to the above-mentioned errors, if repeated, are apt to bring on diarrhoea, cramps, cholera and sometimes death, as previously mentioned. Gingerbread, blackberries, fruit of a similar composition, unripe fruit, greens, tainted meats and fish, raw onions, acidulous wines, milk, vinegar, old lard, butter fat and cured meats, if introduced in the stomach, seldom fail to cause action of the bowels, purging, and if eaten too freely they very often produce severe cramps, diarrhoea, cholera, etc. Blackberries or fruits of a similar composition, with green vegetables, gingerbread or molasses taken any way, certainly produce these effects.

For supper you should prescribe in accordance with the amount and kind of food you have eaten at your former meals. If heartily, make your supper light; in no case overload the stomach. It is bad to eat more than the stomach can properly digest. The explanation of this is more definitely stated heretofore.

AFTERNOON'S WORK.

The afternoon's work should be arranged accordingly; you should go over your course every day at about the time designated to row your race; not always at full speed, though if the men feel all right this should be done, though not at an ex-

hausting pace more than twice a week, at the discretion of the trainer.

The men's strength should be reserved for testing themselves on time; not too much work on that morning, and a rest in the afternoon, but look out they don't get into mischief; don't let them out of your sight too much, and rub down on that afternoon before going out and lessen your liquid on that day about two ounces at dinner ; and try to laugh and joke before getting into the boat, as you should on the day of the race, before going out to the contest ; have your friends there, and let the trainer tell them that he wants them to jest with the men, to get them in good humor.

Short tips on training, or to those wishing to care for their bodies well :

First.—After rising attend to the necessaries of nature.

Second.—Rinse the mouth and wash the teeth.

Third.—Rub the body all over with towel, then with bare hands slap and rub yourself hard.

Fourth.—Bathe, if taking one.

Fifth.—Look after the feet ; if ingrowing nails, put cotton under the corners, and thin the tops over that side, and always keep the inside of the little toe clean or you will have a soft corn there.

Sixth.—Don your clothing for exercising.

Seventh.—Dress according to weather. Don't put on your heaviest underclothing and overcoat because it is January, if a warm day, as many will advise.

Eighth.—For breakfast avoid excess of fat, constantly taking cream or milk in your coffee or tea, too much sugar, sweets, doughnuts, cake, new bread, biscuits, hash, bacon, ham, cocoa, chocolate—none for stout persons, and remember that fruits or greens are necessary to aid digestion before or after a meal, before most purging.

Ninth.—Go to business.

Tenth.—A moderate meal in the middle of the day. It is best not to keep one's self hungry, so as to gorge yourself at night, which makes you heavy, lazy, sleepy, or much less active had you not eaten so much, as it is proper to take consid-

erable exercise after your last meal to make you sleep well and get up fresh in the morning.

Eleventh.—The best way to have the head of your bed is in the north. I am fully convinced that this is the best way to sleep, and facing the window, if possible, as the lights from it have a tendency to wake you up at a proper time.

Twelfth.—Sleep on the right side.

Thirteenth.—In traveling on a car any distance, where a man is sitting a great deal, I am fully convinced a suspensory ought to be worn.

Fourteenth.—Sudden cessation of straining, and tests of endurance impede the action of the nerves, which relaxes the capillaries and weakens the action of the heart.

Fifteenth.—After a heavy strain at tug of war, a man should be made to move around to keep up motion, or he is liable to faint.

Sixteenth.—After a man has run himself out at an exhausting pace he should be kept moving and not stop suddenly, as many do, and which is the cause of their fainting.

Seventeenth.—To bring a man to after fainting, let a strong man rub hard between ear and back of neck, below the base of the skull, on both sides, while another may slap the hands, and a third may rub from the eyebrows upwards; then, if a severe case, put your finger in his mouth, crooking it downwards under the tongue; to do this press downwards on the lower jaw, keeping the finger strongly bent to avoid his biting you. Then run your finger nail across the glands, which are under the tongue, to start the saliva from them, which are dry from exhaustion, and as soon as started, with the other attention, your man is all right. In ordinary cases, rubbing the back of neck will bring your man to. If rubbed well, then put him in motion as soon as you can.

Eighteenth.—To build a man up: Commence rubbing his muscles and let him take a glass of Bass's ale, not more, for breakfast, and a piece of toast, or toast and meat sandwich, with a glass of Bass's ale, one for dinner and supper, and on

retiring, alternating with a good bowl of vegetable soup and toast, with leeks, onions, barley, or rice, maccaroni or vermicelli added. A little champagne about 11 A.M., dinner at 1 P.M., with an hour's rest after.

TO AVOID AND CURE COLDS.

Do not stand in the street on a cold or windy night, especially when coming out of a warm place. In such circumstances you should move quickly, in order to avoid a chill.

Always try to keep your feet dry, but do not use rubbers, unless in very bad weather. A little grease on the shoes is good for keeping out both cold and wet. If the weather is very bad and you are obliged to be out in it, be sure to button your coat around your loins and neck, especially if it is cold and windy. Remember it is always better to put a coat on than to take one off after exercise, and under such circumstances be sure to avoid drafts; beware of sudden changes from cold to heat, or heat to cold. As long as you keep up a good circulation there is no danger of taking cold.

See that your bed sheets are dry on retiring, and your underclothing well aired before they are used. Try by all means to get your skin into a good, healthy condition. You will be much less liable to take cold. (See bathing and attention to skin.)

Immediately upon finding you have contracted a cold don't dose yourself with medicine, but drink two or three cupfuls of either of the following liquids, such as tea, coffee, chocolate, with milk and sugar, plain beef-tea broth, or plain hot water or hot gruel several times through the day; they should be well diluted; barley or rice water, to which a little whiskey or brandy may be added. See that your feet are kept warm by woolen socks, and stamp the feet well with the shoes on, and rub the bare feet on the carpet as hard as you can; then with the hand, with cayenne pepper and oil. After you get them warm, try to obtain a good glow without perspiring. If still affected, at night you may put some woolen article around your feet and neck, but not so much on the neck that you will miss it the next day if you are going out. The

neck must be protected in the same way the following day, also using a little mutton tallow on the throat. By all means do not shut your windows at night; nor do not leave them open, so that you are exposed to the draft therefrom; one inch from the bottom and two at top is best, so that the currents of air meet each other and escape again in puffs at top or bottom. Continue the above treatment, and, providing the cold is not too severe, you will soon be cured.

If the throat is sore, use cough or lemon drops, and gargle the throat with water in which is dissolved a piece of common house soda about the size of a pea, and small thimbleful of cayenne pepper to one glass of water; then put in a bottle and shake well before using, being careful while gargling not to swallow any, though a small quantity may benefit. If extremely sore, add an external irritant in the form of liniment in which cayenne pepper is an ingredient—half spoonful to three-ounce bottle—or, if possible, procure Prof. Judd's liniment, being very careful not to blister the throat. If it burns too much turn the flannel upon which the liniment has been poured inside out, being careful to remove the saturated part of flannel to some other part of throat, and add a little oil. This will relieve you and prevent blistering. Great care should be taken to remove the perspiration, if any, as a person who has a cold in this way is continually catching another. Good nursing is the proper thing in a bad cold.

Always keep the body warm, especially the parts affected, by covering and exercise. The object is to try and cure, at first, by natural means. If your clothing is made damp by perspiration or other causes, maintain the warmth of the body by exercise or extra clothing until you can change for others. Then strip, and rub yourself perfectly dry with a large towel, and put on dry clothing. If you are attending a sick person, and they are perspiring while in bed, only uncover one part of your patient at a time. Wipe thoroughly dry, being careful that there is no draught upon them at the time. If you wish to break up a cold quickly, take plenty of hot drinks before you retire. Warm baths are advisable when retiring, with plenty of good, hard rubbing, after which use alcohol and

sweet oil, with scent if preferred. This should be done in a warm room, and the body should be well wrapped up.

It is a well-known fact that purging the bowels is beneficial if one is suffering from a severe cold. It rids the intestines of their contents and carries off impure matter, which is likely to accumulate when a severe cold has set in.

The cause of a cold is, briefly : something cold has come in contact with the part affected—air, water, or some other form of cold matter. This, of course, must make that part inactive, or partly dormant, according to the severity of the case. For instance, think of a frozen man, and you have the extreme of the sickness termed a cold. It is best to let the digestive organs and absorbing system rest, by not taking too much solid food into the stomach, but by warm drinks for the slim and medium person ; not so much with the fat person, as there is too much danger of taking another cold. In their case it is better to heat the body by means of extra clothing, if possible. This reduces, instead of increases, the bulk, making the person less liable to catch another cold.

The body should be thoroughly rubbed dry after perspiring, and kept out of drafts, though fresh air is necessary. After rubbing dry, rub alcohol and oil all over the body.

COLD IN THE NECK.

The prescription just given is also good for cold in the neck, included with bathing the neck in hot water. Another is this : procure a narrow bag nearly filled with sand (which is the best), or salt ; don't be afraid to make it too large. The best way is to put it in a stone jar, which should be placed in the oven, taking care that the bag does not burn ; put the bag around the throat as hot as you can bear it and wear it all night ; in the morning, after taking the bag off, put some camphor stewed with fat of mutton around the neck hot ; during the day heat this and keep the neck wrapped up with a large handkerchief or a piece of flannel.

COLD IN THE HEAD, AND TREATMENT AFTER FIGHTING.

A head sweat is good. This is accomplished as follows : by pouring a quantity of boiling water into a wash bowl, into

which put half an ounce of chamomile flowers; place two chairs opposite one another—one to sit on, the other to place basin on. This done, put two large sheets over your head so as to keep in the steam. Remain under the sheets fifteen or twenty minutes, then rub the head, neck and shoulders perfectly dry. This should take about ten minutes, as the friction is just as essential as the steam to aid in curing and protecting. Rub the head, face and neck with pomatum, scented hair oil, or if you do not like oil apply alcohol and oil in equal quantities. This done be sure to keep out of the cold. This treatment is also good for a pugilist's bruises after a fight.

TREATMENT OF COSTIVENESS.

One of the mainstays of life is to see you keep the action of the bowels moving regular or the faeces cleaned out, not allowing them to choke up as many do ; this you cannot do without the use of fruit, vegetables or medicines ; the latter is injurious and can be avoided by using the former. No person can live and enjoy good health without this regular movement. The cat will eat the grass, catnip, etc.; so with the dog, horse and their like, and without which they must become sick or are not long-lived. In costiveness I believe it better to use an injection rather than take drugs into the system, the object being to soften the end of the excrement, which is almost sure to cause an evacuation if taken in time ; otherwise, I advise the following simple remedies : Saratoga, Hunyadi or other purging waters, or any good pills you know of, providing they agree with you, or the following mixture :

Magnesia.....	.....	.....	½ oz.
Flaxseed .....	.....	.....	1 oz.
Flower of brimstone.....	.....	.....	1 oz.
Rochelle salts .....	.....	.....	1 oz.

Mix well ; a teaspoonful may be taken in milk or coffee twice a day.

One teaspoonful of glycerine with one drop of essence of roses is good after any severe purging medicine. Make an attempt to evacuate before or after breakfast, or before retiring; to obtain the object a seidlitz powder taken occasionally is good, if requiring a thorough cleaning out ; if one is not suf-

ficient take the contents of two blue papers and one white after which it is best to take glycerine as before stated. I do not recommend any other purging medicine, as there are so many of the same kinds made under different names, and everybody believes in their own medicine by the name they know it, and the mind has a great deal to do with the effect required. Another reason I do not advise medicine is, I believe the old adage, "An ounce of prevention is better than a pound of cure." During my treatment I have attended persons who have not had a passage for from 10 to 18 days, and who have taken the medicine prescribed by their physician, still they could not get it through, and the trouble still continues to brew. I have taken some of the worst cases and have always caused a passage by the following treatment: First, if the bowels are filled with purging medicine, the passage is caused much easier by syringing upwards with a large syringe with force, with good soap suds, to which is added a little common or castor oil; if this don't start it, the following treatment of mine never fails: Take a long bed sheet, fold from 10 to 12 inches wide, then wrap it around the body over the stomach, the patient lying on the back, the ends coming out at either side at the back; see that the sheet is evenly spread over the bowels only, that you may get the full pressure thereon; then let two persons take hold of the ends of the sheet at either side of the bedstead and pull steadily, watching the result while the expert kneads the bowels from the left to right downwards: this I have seen take effect immediately, both up and down; if you fail in the first attempt, which is unlikely, try again about 20 minutes from that time, when it will surely prove successful if done by competent persons. After the passage I hold with taking a mild purging water and any of the following fruits: I should advise an orange first or tamarinds, which are good in very small quantities, as they are sharp to the taste and quicken the action of the glands and saliva, which the stomach must have to keep it in regular motion; stewed prunes, apples, rhubarb, plums, cranberries, currants, raspberries, strawberries, whortleberries, or blackberries. Many of these fruits can be eaten raw; when stewed or eaten

with crackers or dry bread avoid ice water. Gruels made of arrowroot, corn starch or cold jellies are good, to which a little brandy, sherry or port wine may be added. After feeling better you may return to a mild diet, such as boiled rice, oatmeal, hominy ; wheaten grits and puddings for lunch -rice, tapioca or bread. Then on commencing to eat let it be small quantities, and be careful to eat sufficient vegetables and fruit to keep the bowels in motion, which will move its contents along. Broths of chicken, beef, onions or mutton are good, avoiding all fats or rich substances.

DIARRHŒA.

The first thing to be taken into consideration in the treatment of diarrhœa is the cause or that which may keep it up. Let it work a day and it may stop without the aid of medicine, for it is bad to stop it suddenly. However, should such not be the case, then take from one to two ounces of castor oil, and see that it is as fresh as possible. It is a mild purgative if fresh and good, and will clean away the irritating substances. The following, however, is mild, and perhaps more pleasant to the taste :

Rhubarb powder.....	$\frac{1}{2}$ ounce.
Glycerine.....	1 teaspoonful.
Magnesia.....	1 scruple.
Cinnamon water.....	$1\frac{1}{2}$ ounce.
Compound tincture of lavender.....	$\frac{1}{2}$ drachm.

Mix and shake well before taking a dessertspoonful for dose.

The following is noted as a sure cure for diarrhœa. It should not be taken, however, until one of the above remedies have been tried.

As much scraped or pulverized chalk as will cover a five-cent piece, taken in milk. If not effective the first time, repeat ; or chalk mixture from druggist.

In cases of diarrhoea, hot drinks should be constantly taken. Diarrhoea is very often caused by taking cold in the abdomen, in fact much more than is credited. Mixtures of food causing fermentation and fruits to excess should be avoided. For excessive straining and purging I find the fol-

lowing is a wonderful cure : An injection of warm corn starch and laudanum ; dose for child, from three to five drops for every year ; after 4 years, a drop for every year until after 25 years, then add one drop for every two years after 25 years, adding about twelve times the quantity of good, warm corn starch for internal use if for injecting upwards. The measurement is, in short, one-half teaspoonful of laudanum to half cup of rather thin corn starch for a person of 25 years of age.

DINING OUT.

When going out to a dinner party or expecting to overload the stomach, which, by the way, is very injurious to the system, the stomach should be cleaned out with some mild purgative medicine, which should be taken one hour after your former meal. By so doing you remove the substances therein, leaving the digestive organs free to commence action on the next food received. If, after dinner, your stomach feels much overloaded, a second dose, or a pepsin pill, may be taken to aid digestion, as the extended stomach cannot contract or expand as it should, especially if solid food is taken ; which contraction and expansion is necessary to move the contents and distribute the gastric juice, therewith to digest the food at the time necessary to obtain good nutriment therefrom. This often causes much trouble, griping pains, etc. If the food is not digested at the proper time it begins to decay, unless saturated with spirits; then indigestion and costiveness is the result. You then are likely to eat more on the top of it, which becomes tainted by the decayed matter left therein. Human beings manage to conquer every other creature on the face of the earth, but, as a rule, cannot take care of themselves in the digestion of food, which is continually going on, more or less passing off from the first to the second stomach, just as you continue to supply yourself with saliva, swallowing about every twenty-five seconds on an average, if healthy. The stomach is not emptied in a bulk, as many think, and several persons have asked me : " Does the food, after digestion, pass from the stomach to the entrails, as though it were emptied out of a trap—pull the string, and out it goes ? "

A man should be rubbed by another whose blood flows freely,—that is, a man full of life, and one who has some judgment as to where and what muscles to rub before and after a contest; as a man who runs differently from another should be rubbed differently. One who runs and settles on the whole of the foot should be rubbed all around and down the leg; one who runs on the fore part of the foot should be rubbed mostly down the front and back thigh, down the calf especially, and well in the small of the back and back of neck; and the foot should be well attended to. When running on a cold day a man's arms should be well rubbed and, I believe, lightly covered and moved constantly in a long race. I also believe that clubs should allow every man to be coached in a race from all distances after a mile by word of mouth only.

As I am writing I think of an occurrence just past. December 13th I attended a feat which I have witnessed many times before—that is, running on frozen ground. Though an old practitioner, I did not think of the condition of the ground till it was too late to substitute shoes for those which had been provided, which were long-spiked ones, only suitable for soft ground. If I had had time to have examined the track before the race the matter would have presented itself to me. Being a man of business, not able at the time to leave it, prevented my observation of and preparation of the athlete in the way of proper shoes to be worn on such occasion. Mr. Conneff was the principal in this event. He was running in a ten-mile race for the championship of America, which should have been done in short-spike shoes with light corrugated rubber soles, called **Armory** shoes.

The first pair I had made for Puffer, when he ran and won the race in 1889, at Boston. The old adage says, “Remove the cause and you will accomplish the end,” and “An ounce of prevention is worth a pound of cure.” This I shall do in the future by providing a good felt sole inside the shoe, and a light insole over that to avoid the spikes pounding on the bottom and fore part of foot. The spikes must be placed in a certain

position, consequently we cannot move them, so we must do the next best thing. For the cure after the evil has occurred, there is nothing to beat a good flaxseed poultice, mixed with a little washing soda and boiling water. Prepare as follows: Take a piece of soda as large as a good-sized marble, put in a medium-sized tumbler full of water, boil with a cup of flaxseed. This is good for any callous flesh on the bottom of the foot. Use no soda if feet are cracked or split. Put on at night, and in the morning, after taking off, wash well, and when thoroughly dry, rub with a piece of coarse sandpaper, or trim off as much of the callous skin as you can without chafing the under skin; after which put on a piece of French corn plaster and let it bide for two or three days, when they should be attended to again, unless you are in constant training. If so you should attend to them daily, following my directions as given above; care should, however, be taken to avoid making them tender. If this mode of treatment is carefully followed you will cure, and for the future you will find that trying to remove the cause is a far better thing to do than attempting to cure the evil.

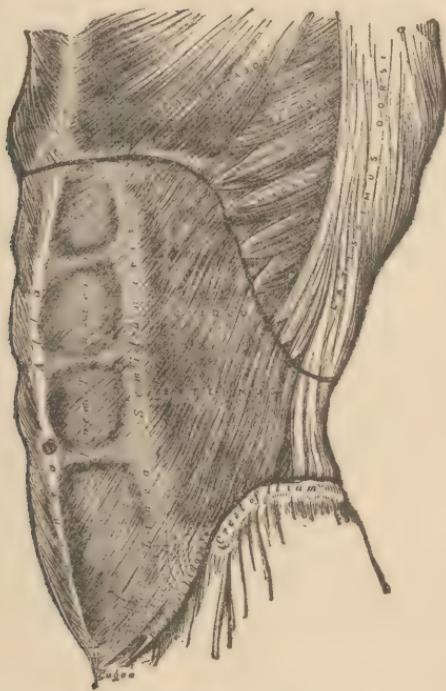
TO DRESS FOR RUNNING IN THE COLD.

Now, to dress your man for a cold day: Oil silk lined with flannel should be worn over the parts, as the pugilist says, "where you live"—from the breastbone down and around the body, meeting at the back, down and back again, following out the lines of the abdomen to the lowest part. It is the greatest mistake in the world to cover a man's chest, where it is almost impossible to catch cold; though in every drug store you see so-called chest protectors, which should all be burned up and the druggists locked up for selling that which is an injury instead of the benefit for which it is intended.

Before putting a person on the track in the winter time they should be first rubbed with oil and alcohol—equal parts—and not a weak solution, such as many use, that is really half water. Rinse the teeth with lemon juice, alcohol and distilled water, equal parts. This is to prevent the bad breath from being inhaled, which generally comes from decayed teeth, and not from the stomach, as many suppose. It is a delicate thing

to tell a person, but it is a fact, that in many cases one's breath is not fit to inhale. Just think of a man running even for half a mile and having to breathe a foul breath; he is likely to upset the contents of the stomach—bowels and all.

Every man wishing to become an athlete should be examined by an expert, the same as a horse, and receive a



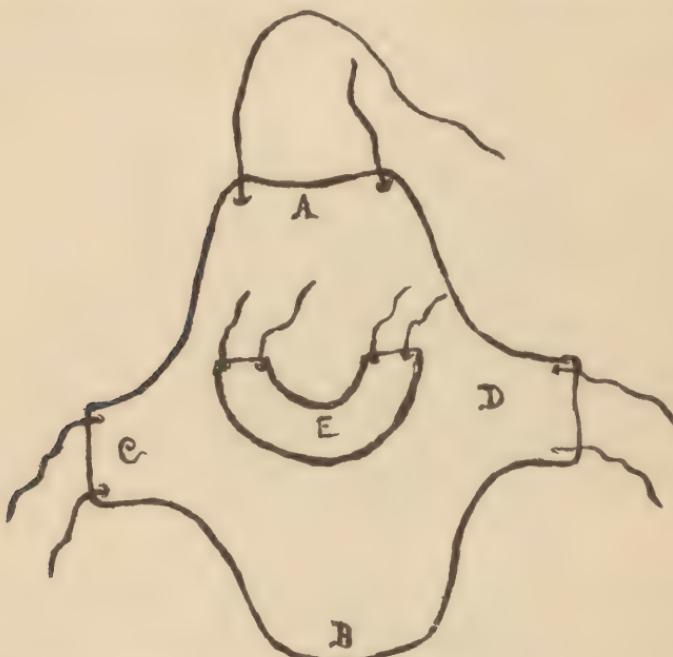
Showing the vital parts that it is so essential to cover and protect.

statement for what he is best built and adapted, as many young men waste their time in life in training for what they are not fitted.

The parts for a man to protect whose lungs are affected are:

First: Round the neck, especially covering the hollow at

each side of the neck, from the first rib to the collar bone, over the shoulder, down covering the center of back, following under the shoulder blade bones down and around, covering the



This is the protection I used on Mr. Conneff the day he won the ten-mile championship of America. The day was a freezing cold and windy one. This, with half-sleeve woolen jersey shirt, woolen jersey suspensory, woolen jersey knee pants, and outside his running pants, including shoes, completed his costume. *E* denotes the protector for the vital parts around the neck; from *A* the tapes run around the neck, tying in front at the chest, or the large protector may be attached to the small one at the proper distance, and held up by the small one being tied around the neck, *C* and *D* around the loins at the back, and *B* the lower part of the abdomen; *A*, *B*, *C* and *D* following the lines of vital parts shown in former figure.—J. R. JUDD.

front as in protector shown for running in the cold, and protecting the lungs*; and it is just as essential for a sick man to

*A man with his lungs affected should, in cold weather, always wear a handkerchief over his mouth when out.

cover his entrails well as it is for a man in perfect health, when running in the wind and cold.

Second : A long-distance runner should start out with a sweater on and run till he gets warmed up ; he must not perspire, as by then taking off his sweater he would catch cold. It is very easy for a man to catch cold if he perspires freely.

Third : Proper attention should be paid to breathing. Breathe through your nostrils as much as possible, and do not under any circumstances, open your mouth to take a full breath, as by so doing you may chill your lungs for the moment and cause congestion and much pain. The nostrils were given you to breathe through. If persons would only train themselves to do this, and travel, train and act according to the weather—spring, summer, fall, and winter—they would be greatly benefited.

A man should eat on the day of a race, say at least two and a half hours before the race ; take plenty of rest with just sufficient exercise to limber him up, so that he may retain all the strength he can.

To tell the condition of a man by shaking hands with him just before his competition, the following should be observed :

1. The man in good condition has a hand moderately warm, with a good feeling of life.
2. The clammy hand is bad.
3. The nervous hand sometimes sweats, but is not dangerously bad. One may be this way and become natural as soon as he has started.
4. But the man with the cold, clammy hand, void of life, is beaten before he starts, you may almost rest assured.
5. An over-warm, dry hand shows fever, and cannot go far at a good pace.

FOR THE RECUPERATION OF POWER.

About 11 P.M. take a bowl of vegetable soup and toast, with leeks, onions, barley, and either maccaroni or vermicelli added. Also a little champagne. Take dinner at 1 P.M., with an hour's rest afterward. Plenty of rubbing, judicious bathing, and fresh air are to be strongly recommended.

TREATMENT OF THE STOMACH.

When the stomach has been abused with spirits, drink a glass of milk mixed with water seltzer as often as you can through the day. If this does not agree with you, boil the milk and add a tablespoonful or more of lime juice and half a glassfull of Apollinaris water. This will help you to keep it down. See that your milk is good. If you do not wish to take milk, weak cocoa or chocolate may be used in its stead, in which sugar may be used sparingly. In cases of very weak stomachs it is necessary to take something to stimulate or cause action thereof, such as seidlitz powder, quinine; Valentine's meat-juice, which strengthens and stimulates; sometimes a little fruit, sago or arrowroot, with a little light port or sherry wine, or cider and egg is good—either that agrees with your stomach; bathing in lukewarm water is good. Lunch or dinner for a delicate person: All light puddings, such as tapioca, rice, bread, cornmeal, corn starch baked or plain-boiled, adding cold milk to eat it with; fruit is good after, acidulous preferred. A little pick of chicken, pigeon or a small wild bird, without stuffing or any rich sauce; roast lamb, beef or mutton, cold or hot pig's-feet or calve's-foot jelly.

INDIGESTION.

It is well known that indigestion is one of the first effects of diminished nervous power, and that disorder of the digestive organs is present in every disease, both corporeal and mental. The effects of undigested food are exhibited by many symptoms; for if the chyle is imperfectly prepared, the body is not properly nourished; hence proceeds a host of distressing effects. Indigestion may therefore be known by some of the following symptoms:—Loss of appetite; a sense of distention or oppression of the stomach after eating; sickness, and sometimes retching and vomiting, especially in the morning; furred tongue, and unpleasant taste in the mouth; palpitation of the heart, and sallowness of the complexion. There is generally a considerable degree of languor and weakness; exercise, or exertion of any kind, soon fatigues; sometimes a lax habit comes

on, at other times an obstinate costiveness. Some of these symptoms are generally present in every case of indigestion. It causes timidity, terror, incapacity, or whatever other magic spell it is, which annihilates for a time the whole energy of the mind, and renders the victim afraid of his own shadow.

THE PASSIONS.

The way to avoid the amorous passions of nature is as follows:—Use light covering on your bed, and put something between your legs to keep them from touching, as a towel or small pillow ; this keeps the parts from becoming heated or excited, and let your eating and drinking be moderate. Bathe in cold water and exercise freely. If this does not have sufficient effect take fifteen grains of bromide of potassium two hours after supper. This should not be continued more than three nights in succession. From six to eight days should elapse before repeating the dose, and should not be made a practice of either.

WEAKNESS.

The principal causes of weakness are dissipation, too much intercourse, self-abuse, excessive drinking, over-exertion, straining in cases of dysentery, loss of blood, running sores, excessive smoking and expectoration, coughing, perspiring too much, especially if caused by artificial heating or excessive exercise ; bathing in extreme hot or cold water, starvation for want of proper food, night sweats and many other causes. Never, therefore, go to extremes in anything. Pay attention to my instructions and the causes may be made to disappear entirely.

Such persons or people troubled with indigestion should eat when they feel like it, but not much at any time. They should not, either, exceed three meals a day, going to bed on an empty stomach, or, if they feel very hungry, eat but a little light food. It should not, however, be made a practice of, as it is better to feel slightly hungry than otherwise. Anyone feeling very tired should not eat a hearty meal, for when fatigued the digestive organs will not act, and overloading the

stomach when the body is much exhausted oftentimes produces a bad illness.

General debility is likely to cause any bodily ailment and ill imaginations of every description, to which assertion any good physician will assent. Therefore it must be no small consolation to the afflicted to know the cause of their disease, and the means to be adopted for their cure, thus leaving their minds at ease on a subject that so naturally concerns them, and also to get clear of a wilderness of opinion, founded on error and supported by bigotry and prejudice. I am fully convinced of the efficacy of good nursing; proper food with exercise, attention to the skin, and rest is the proper way to obtain health.

SLEEP.

Your sleep should be about eight hours, whether retiring late or early. Two hours before midnight, however, is worth four after that time in the amount of refreshment secured. Before retiring see that your room is well ventilated; and if you wish to study after retiring, lie on your back or front; no pillow should be used when lying in this position, but when you feel like going to sleep lie upon the right side. If you awake during the night turn on your left. When you awake in the morning occasionally lie on your abdomen in the following stated position:—One arm and leg extended, the other drawn up toward the head; rest the face on the same side of which the arm and leg is extended, without a pillow, and reverse. Your pillow at night should be as high as the measurement from the outer part of your shoulder to your head.

For curvature, lay on the affected side; if on right side, lay on that side; if left, lay on the left side; if forward, lay on your front with head turned sidewise, the opposite knee bent, raised up to make you lie easy.

TO CURE CORNS.

First soak your feet in warm water; then take some common potash, dissolve it by heating; then add enough pulverized gum to mix into a paste, so that it will not run. Apply a piece about the size of a pea to the corn with a piece of stick;

let it remain about six minutes, or until it begins to burn; wash off with water and afterwards with vinegar; then remove the root and cover the place with a piece of court plaster.

FOR BLISTERS.

If skin is off, mix a little pulverized saltpeter with arnica. Saturate a piece of brown paper with the mixture and dry it; then set fire to the paper and burn on a common flat-iron, and apply the moisture which will be found on the iron to the blister.

The above is for blisters with the skin off. If a blister has the skin on the treatment is to prick the blister through from the living skin, letting out the greater portion of the humor; then heat a common knife black hot, and touch the blistered skin with the flat portion of the knife until the person feels the heat; then let him pull away immediately, touching about twice; be careful not to burn. Remember, a touch is sufficient. This is an immediate cure if done properly.

FOR FEVER.

Fever may arise from any irregularity of the body, such as irritation, slow inflammation, or by the fluids of the body becoming corrupted through absorbing the morbid matter. Fever, however, is generally caused by some other disorder, or symptoms of such; therefore the treatment must be directed to counteract the diseases on which it depends. The bowels should be cleared the first thing with some cooling medicine, such as taking an ounce of Rochelle salts, dissolved in water. If, after this has worked, the fever still continues, the following treatment may be resorted to. It is mild, and apt to cause you to perspire and break the fever.

Put the feet in hot water at the side of the bed for fifteen minutes, and take as many drops of ammonia as you are years old, with half the quantity of peppermint in a glass of warm milk. Then dry the feet well and cover them with flannel, get into bed and cover up warmly. Drink at intervals cool, acidulous drinks, and use light and nourishing food. Take care also to keep the bowels open and the room warm; wash the body well

with salsoda water and alcohol, equal parts, half a limb at a time. Keep the body well covered.

FOOD WHEN SYSTEM IS OUT OF ORDER.

The following will show the kind of food to use when the system is out of order:

If feverish, use more fruit, greens, and acidulous drinks; also take a little broken ice in the mouth occasionally.

If costive, use plenty of raw greens and fruit—black skinned fruits, and gingerbread, rhubarb, sour grass, etc.

If the bowels are loose, eat no fruit or greens, but rice, corn cakes, meat, games, toasted bread, crackers and oatmeal chips and cake. Drink as little as possible; no acidulous drinks; a little spirits may be allowed, and from five to fifteen drops of laudanum in corn starch gruel is good, or more, according to age; the same may be injected upwards; never fails when taken both ways; if used strong enough, one drop to each year of your age. See diarrhea.

It is the usual habit for men in training to take port wine, sherry or cider with an egg in it before going out in the morning, with a cracker or something of that kind; but this should not be made a practice by one in good health, as it takes away the appetite for breakfast, and sometimes causes indigestion. It is more fit for a weak person, as his absorbing system is craving for nourishment.

DIET.

For breakfast, dinner or supper (the latter should be the lightest meal of the day), if you are going to tax the brain, either of the hard vegetables, fish or brains should be eaten; meats, poultry and game to be taken very sparingly. Cereals, such as the following, are good, viz.: Oatmeal or cornmeal porridge, rice, hominy, sago, arrowroot, wheaten grits. Drink tea in moderation, and nourishing drinks between meals, and water occasionally as stated in table. If it is desired to exert the body with a light mind, eat meat, poultry, game,

eggs, bread, hard vegetables and boiled fish in moderation, with a small quantity of wine or ale.

The question which some may ask as to why we should eat meat, vegetables, fish, etc., if we obtain the qualities above referred to, is easily answered : simply because the meat, game, poultry, etc., contain fiber, sinew, skin, fat, flesh, blood, etc., which make muscle and give strength and agility, while the vegetables advised are to regulate the bowels, and by drinking a little light wine tends to lighten the mind. The qualities contained in the meat are subtracted from the vegetables the animal eats, and we obtain the extract in eating the flesh ; consequently we can eat a much less quantity of meat than of soft vegetables to obtain the same amount of nourishment, thus making one more active, both in body and mind.

If a person were to live on raw meat alone he would soon become too uncouth for civilized life. The Indians live more upon meat than vegetables, nuts and herbs. Hence their wild and active life in the wilderness. There is also a possibility of a man becoming effeminate by eating and drinking delicate food, such as pies, cakes, jellies, fruits, milk, syrups, sugar, coffee, tea, lemonade and other articles of saccharine taste.

Persons may diet themselves for strength and agility, or, again, so that in their nature they may resemble the most delicate female.

A man's life may be prolonged, even after he has reached an extreme advanced age, if he would eat young wild meats, chopped and minced so that they might be easily digested ; drinking at the same time the extract from the same, together with mucilaginous food, vegetables and fruits, with homemade bread, for which yeast, salt and potatoes alone are used ; also such liquids as beef tea, barley water, and a little plain water—say from four to ten ounces—might also be used per day.

This diet, with proper attention to the skin and the bowels, having a knit bandage around the waist, with no dissipation, proper sleep, an easy mind, a little exercise, good liquor rubbed all over the body, and daily a small cup of ginger tea

with a teaspoonful of good brandy in it, will have the effect of strengthening and prolonging even a waning life.

DRINKS.

The following plain drinks are recommended for their mild effects, pleasant taste and nutritious qualities, if made in the proportions stated below :

Toast Water—One quart of water to two slices of burned bread.

Rice Water—About six ounces of rice to a quart of water.

Barley Water—About six ounces of barley to a quart of water. (It should be ground and boiled, or simmer for one hour or more to mush, then strain. Let it stand till cold and stir before drinking, or strain if necessary.)

This may be drank plain or mixed with the following fruit preserves : blackberry, cherry, currant, strawberry, orange or lemon, in the proportion of two teaspoonfuls (and, if preferred, with one of Old Tom gin or other spirits added to suit the taste) to a tumblerful of one or other of the above-mentioned waters. This strengthens and improves the taste.

The following may be taken as a change at breakfast or any other time : Beans, rice, barley roasted and ground and decocted in the same manner as coffee, and drunk plain or with a little sugar; beef tea, chicken and mutton broth, with toasted bread. Rice or barley may be boiled with either of them.

Tea and coffee, not too strong, are not bad occasionally, as they stimulate the nervous, making them more active and brightening the senses. They should be taken in the morning, or when feeling drowsy and wishing to be enlivened. Men performing feats requiring an extraordinary endurance will find tea the best stimulant of all, being the favorite beverage on the track of the great athletes of Europe and America, such as Captain Barclay, W. Wheeler, O'Leary, J. Lambert, J. Kenovan, Rowell, Hart, Brown, Mountjoy and others, who have always used it when performing these great tasks.

I, myself, have used it during the performance of all my feats.

Wine, cider and ale, if taken at all, should be drunk in quantities as follows :

Claret—From one to six ounces, including water.

Sherry—From one to four ounces, including water.

Champagne—Two to six ounces, according to quality.

Cider—Six to ten ounces (not sweet).

Strong wine may be tasted in the pure state, but should be drunk diluted with one-third water, unless in case of sickness.

Ale, stout or porter, in quantities from six to ten ounces.

Pale or bitter ale is the best to drink for training. Stout and porter are not so good, only to build up on. Beware of sour ale, as it will purge you.

The exact quantities can only be ascertained by experiment on one's self. It should not affect the head. More than the largest quantity mentioned above is deleterious.

MEATS AND POULTRY.

The following meats, poultry and game may be used, cooked differently and changed from time to time, according to directions. But first let me say that poultry of an oily nature, such as the domestic goose or duck, especially when very fat, are hard for a business man to digest, therefore they should only be eaten by hard bodily workers, such as the laborer, farmer or a person in a cold climate.

Beef—in joints, roasted or baked.

Beef (salt)—May be used after being in pickle from four to six days, no longer.

Beefsteak—Broiled, also cut up and stewed with a little gravy, or mixed with veal and made into puddings and pies, with top and bottom crust. For this, lean meat is required.

Beef, as a rule, is supposed to be the best meat. Mutton for those with whom it agrees, on account of its being easier of digestion.

Mutton—Joints boiled, roast or baked.

Mutton Chops—From the leg, rib or shoulder, broiled or stewed, with or without a few potatoes and onions, if they agree with you. Fat should be avoided.

Lamb—Joints may be cooked the same as mutton.

Venison—Joints, boiled or roast.

“ chops and steaks, broiled or stewed.

“ fricasseed, or made into pies or pot-pies.

Turkey—Roast, boiled, stewed or baked. Joints broiled.

Chickens—Roast, boiled, or baked. Joints broiled or stewed, fricasseed, or made into pies or pot-pies.

Rabbit—The same as chicken.

Hare—As rabbit.

Veal—Joints roast, baked or boiled. Steaks and chops broiled. Cutlets dipped in egg and bread crumbs, broiled; also stewed and made into puddings and pies. A little steak added is better for puddings and pies.

Wild Duck—Roast, pot-pie, fricasseed or baked.

Prairie Chicken—As duck, including stew.

Quail—Roast, baked and broiled as other game.

Partridge —	“	“	“
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Snipe —	“	“	“
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Pigeon —	“	“	“
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Woodcock —	“	“	“
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Grouse —	“	“	“
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Squirrel—Roast, baked and broiled as other game, including pot-pie and stew.

The following parts of animals should not be eaten too often, being composed of more gelatine than those organs of a similar nature in your own body can make use of; therefore the overplus must go to waste. It is also injurious in this way: viz., preventing other nourishment in the stomach from being absorbed. If a person overfeeds himself with one or more kinds of food, he becomes sick at the stomach, throwing off the whole of the food he has eaten, or a portion of the rich oily substances which rise above the others. This is often the cause of bile, biliousness, dyspepsia, indigestion and many other kindred complaints.

Sweet Breads—Broiled or boiled, with a little seasoning, is easily digested. When broiled, eat with lemon.

Belly Girth—Broiled.

Tripe—Broiled or stewed. It is best with seasoned onions.

Pigs' Feet—Well boiled.

Calves' Feet—“

Calves' Head—“

Ox Tail—Well boiled or stewed.

Brains—Broiled or fried, with bread crumbs. Boiled in a cloth, seasoned with a little parsley.

SEASONING.

By adhering to the following rules your food will be found much more healthy and nutritive. Excessive seasoning is not allowed to a healthy person, except at times. It affects the system in a manner similar to stimulants.

Salt and vinegar are exceptions when used in moderation. The vinegar and salt render the muscular fiber more tender, and are found to produce a fluid having some analogy to gastric juice.

SOUPS.

Soups and broth should be taken with as little fat as possible, and in the making but few vegetables should be used, while seasoning should be also sparingly employed. The following meats may be used for a healthy person :

For Beef Soup—Shin, leg, neck and oxtail.

For Mutton Broth—Neck, shoulder and head.

Turtle Soup is nourishing, but should not be too highly seasoned.

Mutton Broth may be eaten with toasted bread, crackers, or tops and bottoms.

Soups are best mixed with two or three of the following kinds of vegetables :

Onions, leeks, parsley, celery, tomatoes, barley, rice, peas or beans.

Toasted bread, crackers, tapioca or oatmeal may be put in when cooked. When taking soup, much of any other liquid should be avoided.

VEGETABLES.

But few city people know from what ground our vegetables are taken, or the position of the land they grow on. Many vegetables are grown that are good only as they appear to

the eye. Vegetables of the same name do not always contain the same ingredients, as one may be wholesome and another impure, according to their size, weight and the nature of the soil where they have grown.

Corn—Green, is good and nutritious, if eaten without too much butter, salt, pepper, etc. This article relates almost entirely to the digestive organs, the due discharge of whose functions should be considered.

Beans—Are among the most nutritious qualities of vegetables for those with whom they agree.

Peas—As beans, but somewhat milder on the system.

Hominy—Nutritious. Good for breakfast.

Parsnips—Are somewhat nutritious, but disagree with some people. If troubled with indigestion, avoid them.

Among the vegetables that are unhealthy in training for muscular development are potatoes, beets, cabbage, artichoke, cauliflower.

Carrots—The same as parsnips.

Turnips—May be used.

Onions—Are good boiled, roasted or baked (white are the mildest).

Rice—Is very nutritious. It may be ground and made into bread instead of wheat flour, boiled plain, or made into pudding. Good for any meal.

Indian Corn Meal—Very nutritious made into cakes, mush, or bread. Can be eaten at any meal. Rice, whole wheat meal, oatmeal and Indian corn cakes are the only kind that I recommend.

The following green vegetables may be eaten only moderately. In quantities they are purging, especially if eaten alone.

Watercress—When young they are very mild to the taste and the system. When old they are hot to taste and heating to the blood. Eat with little salt or plain.

Green cabbage, spinach, kail, etc.

Diet has the greatest influence on health, and should be very carefully selected. Although a man who exercises much and vigorously can digest richer food than one who does not,

still it is safe in eating or drinking to be guided by the usual natural signs of Nature's alarm; in cases where the stomach rebels against any food it should be forbidden for a day or two ; if still the same effect, omit for a week or more, then try it again, and if still the same effect, discontinue the use of it for months, in that especial article, unless after eating again something of acid quality be eaten with it, such as acidulous fruit, or saturated in vinegar, etc.

For breakfast the food should be plain. There should be no stewed meats, or mixed dishes. The extreme of indulgence at this meal should be two varieties of plainly cooked food, and even this should frequently be of one kind.

The heartiest meal should be indulged in, if possible, at mid-day, though an exception might be made in the case of those who are called on to perform a great amount of brain-work, the overtaxing of the digestive organs during the business hours of the day tending to lassitude, and occasioning a great and unnecessary strain on the faculties.

I find that persons lounging or sitting about in idleness for any length of time become worried, anxious and fidgetty. When these symptoms appear the remedy is motion and copious application of cold water, washing the face and back of the neck, or a cold bath followed by a vigorous rubbing and exercise. The favorable change wrought on a morbid person by this bathing and exercise is wonderful. The so-called suicidal mania is simply an exaggeration of this preliminary morbid state, and a pail of water thrown over the most determined of self-murderers at the height of his morbid fancies, would undoubtedly occasion a complete revulsion in his melancholia. This is borne out by the fact that many of those most determined on death have no sooner felt the shock of the plunge into the cold waters of the river than they have changed their minds and made the most desperate effort to preserve their lives.

Actual experience—that best of teachers—proves the reliability of the system set forth heretofore. Many instances of the fallibility of ordinary methods of judging the physical condition and fitness of men for certain lines of duty calling for the exercise of strength, have come under my own observa-

tion. In passing a man for the police force he is examined, measured and weighed, and if he does not come up to the standard laid down he is rejected. I have taken several of these men who have been rejected for being too light weight, although they may be as fit for appointment in regard to physical power as any men on the force. I have added many pounds to their weight within four hours, in order that they may be passed. This was accomplished by feeding them with a quantity of milk, crackers and stale bread.

If a man be trained down to a fine condition, and then presented for inspection before many physicians who are not accustomed to the appearance of a man in such condition, they would possibly pronounce him a sick man, when in fact the patient is so full of life and vigor that he is able to overpower men larger, stouter, and possessing what is called by professionals "dumb strength." This "dumb strength" is useful in lifting a barrel or heavy box, but in pugilistic emergency, for instance, it would be unavailable against the wiry, sinewy and well-trained athlete, who would at once assume the position of the bull-dog worrying his strong antagonist, the bull, into defeat, in spite of his possession of an enormous reserve of this same "dumb strength." It is the same in the case of the trained race-horse who could jump over, run around and worry the ponderous and powerful draught horse, wearing him out on the point of physical endurance.

To conclude these remarks and directions of special muscular development, it may be added that the exercises named heretofore are not intended as a list of the only effectual means of developing the body. It has been my intention to simply give an idea of the tests that may be indulged in, with a view to the special development of the muscles by in and outdoor exercise.

There is nothing superior in general action in the water or long-distance swimming, included with your good condition, to greasing the body all over with beef tallow. Webb, Johnson and Beckworth in their palmy days always used it.

DIGESTION OF FOOD.

1. This depends entirely upon the strength and health of the person.
2. The mastication and kind of food eaten.
3. The action of the glands, the amount of saliva swallowed; as I believe it is just as necessary as it is for a cow to chew its cud, the saliva much aids digestion.
4. Drinking at the later part of your meal, as it saturates the food thoroughly and you will not take so much therein to dilute the strength or distend the stomach, which I believe if done impedes digestion, as it prevents the expansion and contraction, which it will not do if eating and drinking in moderation. The digestion of food as given by many of our learned men I disbelieve in and give my reasons herewith, as the proof given is not sufficient, as it was obtained as follows: The stomach the experiment was tried on, to ascertain the time required for the digestion of food, was disabled, and whether Dr. Beaumont ever made any allowance for difference in ability between an imperfect and perfect stomach, which no doubt exists, I do not know. That food would be digested much quicker by a strong man in perfect health, than by a weak one in imperfect health, is, I think, undeniable, and I believe in many cases before the time given.

		Hours.
Mutton, fresh	boiled.....	3
"	broiled.....	3
"	roasted.....	3 or more
"	stewed.....	3 30
Beef,	roasted.....	3 30
"	fried.....	4
"	salted, boiled, much cooked.....	4 30
"	medium done, not too salty.....	4
"	steak broiled.....	3
"	stewed	3 30
Chicken,	roast.....	4
"	soup.....	3

	Hours.
Chicken, boiled	3 30
" broiled	1
" stewed	4
Other fowls as chicken.	
Ducks, domestic	4 or more
" wild, I believe digest easier; also game, if not too highly seasoned, in some cases has a purging effect.	
Pork, fat, boiled.....	4
" roasted.....	5 30
" salty fried.....	6
" steak boiled.....	3 30
" salt boiled.....	3 30
Sausages, fresh boiled.....	3
" fried	3 30
" broiled.....	3 15
Soup, mutton.....	3 30
" beef.....	3 30
" " and vegetables.....	3 15
" " marrow bones.....	4 40
Fish, salmon.....	4
" flounder, fried.....	3 15
" cod, boiled.....	3 30 *
Oysters, fried.....	4
" broiled.....	3
" plain liquid stewed.....	3
" milk, "	4
" pickled.....	3
Butter.....	4 30
Eggs, soft boiled.....	3 15
" hard "	3 30
" fried.....	3 30
Potatoes, boiled.....	3 30
" fried.....	4
Corn, cakes baked.....	3 30

* All other fish about the same. Fried fish takes longer to digest.

	Hours.
Corn bread	3
Bread, fresh.....	3 20
" stale.....	3
Green corn, boiled.....	3 15
Beets, "	3 40
Turnips, "	3 30
Cheese, strong.....	4
Pie.....	4
Dumpling, plain..	3 30
" baked..	3 45
Pudding, plain.....	3
" much sugar.....	3 30 or more

Excessive eating and drinking causes dyspepsia, torpidity, etc.

A person who indulges to excess at home, or goes out to late dinners, drinking whiskey, beer or wine, and smoking, as many do (with the latter the worst), is more likely than not to have much of the solid contents eaten the night before in their stomachs the next morning. This I know to be a fact, as I have attended many cases where sickness has been caused through such dissipation, or, where I have caused vomiting to relieve a person, I have noted that the same food they had eaten the night before, after its ascension, that but little change had taken place since its entrance, in the way of digestion. This over-indulging is one of the greatest injuries to the stomach. It causes indigestion, sick-headache, stoppage of circulation, cold feet, inflammation of the kidneys, urethra and bladder ; and, in urinating, fullness, straining, and some pain ; and eventually totally wrecks the system.

THE CAUSE OF DISEASE.

I have traced some of the most serious diseases to which the human flesh is heir, to indigestion, occasioned by nervous and muscular debility.

My general plan of treatment has proved a great success, and has given me much satisfaction to see and hear of patient after patient being restored to sound health and physical vigor and the thorough enjoyment of life, through my method of treatment. In many cases the cure has even been brought about after a protracted and apparently chronic affliction.

In this connection mention has been already made of the Columbia machine, which can accomplish every task required of it, and may be relied upon to perform its share of the work better than any known apparatus intended for a similar purpose.

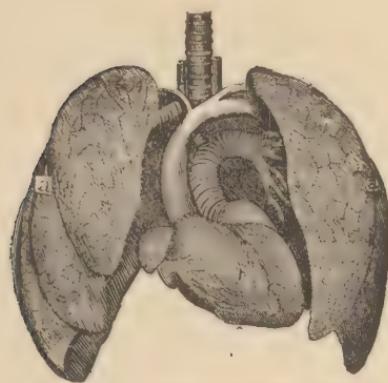
After many years of careful observation the writer has concluded that debility is the cause of almost every disease. Any honest and competent physician will acknowledge this. To the afflicted it must surely be a matter of no small consolation to know the cause of their diseases and the means to be adopted for their cure. It is not only reassuring to have one's malady definitely traced, but to have a sensible way to convalescence marked out, thus guiding one from the wilderness of wild opinions founded in error and supported by bigotry and prejudice.

Good nursing, fresh air, and proper food, with exercise, attention to the skin, and sufficient rest, are the chief if not the only requirements necessary to secure and to retain health.

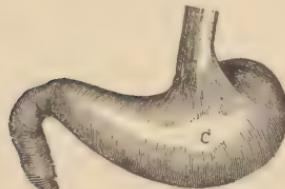
In order to explain how *debility* acts upon the system in the production of disease, and to make this book as useful and intelligible as possible to the general reader, I deem it necessary to give a brief sketch of the anatomical structure of the digestive organs, and their mode of action, which will at least tend to convince the most ignorant that the derangement of those organs may arise from various infringements of the organic laws of nature ; and it will also show how far the treatment which I advocate is in accordance with wisdom.

In order to render the following description of the digestive organs more clear, I have annexed a diagram with the explanation.

The human stomach is composed of three membranes or



NO. 1. LUNGS—THEIR TWO LOBES.



STOMACH, LIVER AND BOWELS.

a, a—The lungs; *b*—the heart, which is immediately above the stomach; *d, d*—the liver; *f*—the gall; *c*—the stomach.

coats. The exterior membrane is very thin and smooth. The middle one is muscular, or is endowed with the power of contracting, and of moving about and expelling its contents. The innermost is the secreting or mucous membrane, which is continuous with that of the whole length of the intestinal canal, and is joined to the external skin at the mouth and anus.

The stomach is the principal organ of digestion. Its figure nearly resembles the pouch of a bagpipe, and is situated beneath the diaphragm, between the liver and spleen. It is joined at its upper end to the oesophagus, by an orifice called *cardia*. The heart and lungs are above it. At the lower end the stomach is joined to the duodenum, or first intestine, by an orifice or ring, where is a kind of valve, and is intended for the purpose of retaining the food in the stomach until it is properly digested. It is endowed with an instinctive faculty to judge between digested and undigested food, since it permits that which is digested to pass out as fast as it is formed, but closes against the portions of food which are yet solid and undigested.

After the masticated food is received into the stomach, it is transformed into a peculiar matter called *chyme*. The chief agent in this process is a fluid termed the *gastric juice*; it is the most active substance we are acquainted with in nature. It is secreted from a great number of small blood vessels imbedded in the coats of the stomach. When the stomach is empty the gastric juice is secreted in a very small quantity; but when the lining membrane is stimulated by the contact of food, a quantity sufficient to dissolve food enough for the supply of the natural wants of the system is then poured out.

Many experiments have been instituted by Spallanzani, Gmelin, Tiedemann, and other physiologists, to ascertain the nature of the gastric fluid, and the mode of its operation on the food; but it was not until the year 1822 that an advantageous opportunity presented itself to Dr. Beaumont, an American physician, for crowning such efforts with success. On June 6th, of that year, a young Canadian, named Alexis St. Martin, received a very severe wound in his left side by the bursting of

a gun, which extensively lacerated and laid open the cavity of the stomach. His life was for a long time in most imminent danger; but at the expiration of two years he recovered his health completely and subsequently married and had a family. There remained, however, an aperture in his stomach of near three inches in diameter, which would not close up; and through the orifice (which was usually closed by a bandage) the contents of the stomach could be drawn out.

Dr. Beaumont ascertained that the gastric juice is very like saliva in its appearance, and it was found, on chemical examination, to contain a considerable quantity of the muriatic and acetic acids, in an uncombined state. He ascertained—and the fact is of great importance—that a certain quantity of the gastric fluid can only act upon a limited amount of food; so that if more be taken into the stomach than the gastric juice can dissolve, it remains there undigested, and becomes a source of irritation and debility to the digestive organs.

As soon as the chyme has passed through the pylorus into the duodenum or first intestine, it is mixed with *bile* and *pancreatic* juice, which complete the work of digestion. Bile is secreted from the liver, and poured into the intestine near its commencement. It is a yellow or yellowish-green fluid, of a peculiar smell, and of a taste at first sweetish and afterwards intensely bitter. Bile is not passed into the duodenum as soon as secreted from the liver, but is accumulated in a reservoir called the gall-bladder, which accumulation is going on when the stomach is empty; but during digestion the bile is poured directly from the gall-bladder into the duodenum, and is there mixed with the chyme. It is in the gall-bladder that the *gall-stones*, as certain hard concretions are erroneously called, are sometimes formed; and in passing through the narrow tube or biliary duct which terminates in the intestines, cause the excruciating pain complained of in that affection. Pancreatic juice is secreted from the pancreas, a glandular organ of a long figure, which lies across the spine and under the stomach. Its duct enters the duodenum along with the biliary duct, so that two fluids meet at their entrance into the intestine.

The intestinal canal extends from the pylorus to the anus, and in the human subject is from thirty to thirty-five feet long. It is curiously convoluted or folded up in the abdomen, and is divided by anatomists into six portions; but for every useful purpose may be divided into two portions—the small and the larger intestine.

The bile and pancreatic fluid meeting the chyme in the first part of the intestinal canal, become intimately combined with it, which they further attenuate and dissolve, and by the contractile power of the intestines the whole is pushed forward. In its course a nutritious milk-like fluid is separated, termed *chyle*, which is absorbed by the *lacteal* vessels into the system, to be mixed with and form new blood. The rest, which is not fit for nourishment, is expelled from the body.

Lacteal Vessels.—These small pellucid tubes, which arise in the mucous membrane of the intestines, were perfectly unknown until Asellius, a celebrated Italian anatomist, in the year 1622, discovered upon the mesentery of a dog, white lines extending from the intestines to the glands. He observed that they contained a milk-like fluid, and hence termed them *lacteals*. In the year 1649, Pecquet, a renowned French anatomist, discovered the important fact that these vessels gradually unite together as they approach the upper parts of the body, and at length terminate in one common trunk, termed the *thoracic duct*, or *chest-pipe*, so called from its course being through the thorax or chest, in front of the spine; and its office is to convey the different streams of chyle, collected from the intestines during the process of digestion, to be poured into the *subclavian vein* just before the latter reaches the right side of the heart, where it is mixed with the current of the *venous blood*.

The conversion of chyle into blood is effected by the following process:—After it is absorbed from the intestines, it may be regarded as *blood* in an early stage of its formation. Whilst traversing the lacteals it undergoes many changes, and becomes more and more of the nature of blood as it reaches the receptacle from which it is poured into the current of

blood. These changes arise from the influence effected on the fluid by the living coats of the vessels.

Although the chyle is poured into and mingled with the blood, yet it has to undergo other processes in the wonderful laboratory of the system before it is fit to perform its functions of nourishing the body. To complete its preparation it still requires to be exposed to the action of air. This is accordingly done on its passing through the lungs along with the dark or venous blood, which stands in need of the same change. In the course of its passage through the lungs, both the *chyle* and *venous blood* are exposed to the influence of the atmospheric air, brought into the air-cells by the *bronchial tubes* or air-vessels, in the act of respiration, where it is converted, along with the venous blood, into bright arterial or nutritive blood. The change which the chyle undergoes in the lungs is termed *sanguification*, or blood-making.

Respiration, then, is the completion of sanguification, for aeration is so indispensable to the renovation of the old, and the formation of the new blood, that whenever it is rendered imperfect—either by obstructions in the lungs themselves, or for want of pure air to inspire—the result is invariably injurious to health, since the blood, being no longer properly constituted, becomes incapable of furnishing a healthy stimulus or properly nourishing the body. We therefore see the rapid emaciation which follows the appearance of *pulmonary consumption* and other diseases affecting the structure, and consequently interrupting the functions of the lungs. The great utility of good air, in both health and disease, is thus rendered manifest; for the organs of digestion may perform their functions aright, and the lacteals may duly convey the chyle into the circulating system, but unless it undergoes the necessary change in the *air-cells* of the lungs it will not constitute good blood, or afford due nourishment to the body.

It will necessarily be perceived that aid in the movement and cleansing of the body and bed, together with fresh air, must be beneficial; as, for instance, rubbing the body before and after washing. This, of course, gives action to the nerves and circulates the blood. If it is remarked how an apparently

drowned man is frequently resuscitated after he has actually breathed his last for at least once in his life,—how, through energetic and systematic manipulation, rubbing, slapping, and by another strong person breathing into his lungs—how he is actually brought back to life by enforced exercise,—if these things are remarked I think it will appear with logical force that the principle of preserving and restoring vitality when stagnant or stagnating from other causes, my exercise and care holds equally good as in the case of the drowned man. By the same principle in action a sick person can be made well ; if he were taken in time, manipulated, and started on a systematic course of light exercise, his vital forces would increase, even if the patient had only power enough to move his arm. It should be impressed on everyone that movement is the accompaniment of life ; that without it we cannot live, and that if this principle is followed the proportion of healthy to unhealthy persons will be greatly increased.

OFFICES OF THE BLOOD.

While the combined mass of chyle and venous blood is undergoing the process of aeration in the lungs, it is gradually returned by the pulmonary veins to the heart, and poured from their trunks into its left auricle ; thence it passes into the left ventricle, and, by the contraction of this cavity, is delivered into the aorta, which vessel, acted on by the muscular action of the heart, propels the now renovated, life-sustaining blood through the arteries into their innumerable minute branches, termed capillaries. In these remote arterial branches, which pervade the body, the blood effects its destined end, namely, the important offices of nutrition, secretion, etc. This effected, it becomes of a dark color, in consequence of having parted with its oxydized properties, in which state it is returned by the veins to the right auricle of the heart. The latter organ then propels it through the lungs (along with the chyle as before stated) to be subjected again to the influence of the air in the lungs.

The blood supplies every waste of the body made by the

different secretions, such as perspiration, gastric juice, milk, bile, etc. It sustains every part of the body, both solids and fluids; it repairs diseased parts; in short, it regenerates all the solid parts of the animal system and replenishes all the waste of the fluids. The influences and uses of the blood upon the nutritive functions may be easily proved by tying the principal blood vessel, and so causing a permanent diminution, to any considerable extent, in the quantity of blood with which any organ is supplied. A decrease in its size is soon apparent, and it may shrink to almost nothing.

THE PRINCIPLES OF LIFE AND DEATH.

In the foregoing pages the process of digestion has been explained--how the food is dissolved into chyme by the aid of gastric juice poured from the coat of the stomach--how the chyme is changed into chyle by the addition of bile, etc., and how chyle is absorbed into the blood and becomes the source whence every element of the system is derived. But our description has only yet embraced the muscular processes of assimilation.

There is a something wanting, and which may be comprised in the questions--What puts our organized machinery into action? By what means are these wonderful operations produced and perpetuated for so many years? To say the body is put into motion, regulated, and continued, by the vital principle, or *life*, is only telling the reader what he already knows. The question still remains unanswered--What *is* life, or that animating principle by which the body is sustained and preserved from decay, from birth to the grave?

With all our researches in and advances in knowledge, there are very many subjects which we cannot comprehend; there are mysteries dark and impenetrable, which the human mind will never be able to solve. We see a wonderfully-made body, performing many marvelous functions, and controlled by an animating principle termed **LIFE**, the real nature of which we cannot understand. We can, however, explain the principles on which life acts, in producing motion, and ena-

bling *organized* matter to perform its functions. The life of every organism begins in motion, and ends in rest. Indeed, throughout all nature motion is the source of every combination, and its extinction is the cause of death.

We know, by many direct and unfailing experiments, that life, or vitality, consists in *nervous power*; and through this power all the different organs of the body are enabled to perform their functions. It is nervous power which causes the stomach to secrete its juice, by which the food is dissolved into chyme; the same power causes the liver and pancreas to secrete their juices, by which the chyle is produced; and it is the same power which causes the lacteal vessels to absorb that fluid and convey it into the blood, by which the body is nourished. The same power is also the direct cause of all the other secretions of the body, and it is the cause of motion.

Nervous power originates in the *brain* and *spinal marrow*; the latter, however, is merely a continuance of the former, and the channels by which it is conveyed to every part of the body are the *nerves*. The nervous system being of so much importance, both as regards the origin and cure of diseases of which I claim I have cured many bad cases, I deem it necessary to render a brief explanation thereof.

The nerves issue in pairs, one of each pair being allotted to each side of the body. From the brain and spinal marrow I believe there arise forty-three pairs; twelve from the brain and thirty-one from the spinal marrow. The nerves have the appearance of whitish cords, and every large nerve consists of a bundle of smaller ones, each nerve dividing like the branches of a tree and spreading their ramifications over the whole body until they become so small as to escape our senses; of their presence, however, we are fully satisfied, as we cannot wound any part of the body without exciting pain: a proof that the nerves are injured by it.

The nervous system is a mysterious portion of the body; and its nature and influence—in conveying motion, sensation, and perception—have been problems amongst physiologists in every age, the solution of which is attended with many difficulties. Many physiologists, both in ancient and modern

times, have regarded the nerves as solid capillaments, or like the tense and elastic strings of a musical instrument, operating by tremors and oscillations; which hypothesis prevailed among the Greeks, although it was not the opinion of Hippocrates.

Sensation and motion are communicated by the nerves to every part of the body from the brain and spinal marrow. The nerves which arise from the anterior portion of the brain, called the *cerebrum*, govern the organs of *sense*, as the taste, sight, hearing, smelling, etc., and when their nervous connection with the brain is interrupted, the functions of these organs are destroyed. The nerves of *motion* arise from the posterior part of the brain, and the spinal marrow; and when any of the muscles of voluntary motion are deprived of nervous power, they no longer obey the dictates of the will. For example:—If we cut, or merely tie, a nerve of motion, the muscle with which it is connected becomes instantly paralytic; but upon untying the nerve the muscle recovers its wonted feeling. Again, if we compress any particular part of the brain or spine, that part of the body becomes motionless which derives nerves from the part compressed.

Thus, by means of the brain and nerves, we are doubly connected with the external world. Through the medium of the nerves of sense, we perceive the events that are passing around;—through that of the nerves of voluntary motion exciting the muscles, we are enabled to influence those events.

The process of changing food into the various materials of the body, as before observed, commences in the stomach, but that organ derives its *vital* power from the brain, communicated to it by the *pneumo-gastric* or *eighth pair of nerves*, which nerves rise from the lower part of the brain, near its junction with the upper part of the spinal cord. It is at this base of the skull I have done my work in bringing men to their senses when being knocked out, as the pugilist terms it, or when the sense is lost from any other cause, which many physicians have noticed here. The eighth pair of nerves connect the stomach with the air passages, lungs and heart, and through its connection with the *great sympathetic nerves* (with the latter is a

collection of filaments from every nerve in the body), it communicates with every nerve in the system. The sympathies produced by this nervous chain of communication, in health and disease, are innumerable and important, seeing that it connects the vital, the animal, and the natural functions with each other, and which *render the stomach the seat and center of universal sympathy*. I hope the reader will bear these facts in mind.

In order that the unprofessional reader may be fully convinced that nervous power is the vital cause of secretion and digestion, I will relate the results of a series of physiological experiments confirmative of the fact; and although they are a repetition of the most ancient experiments of which we have any account, they are, nevertheless, perfectly conclusive. The *eighth pair* of nerves in the neck of a rabbit were cut in two immediately after a full meal (the animal having fasted two hours prior to the meal preceding the operation), and when killed six hours after the operation, none but undigested food was found in the stomach. The experiment was tried on a number of rabbits, and the effect was uniform in every case; whereas if a rabbit be killed without the division of these nerves at any time after eating, the food found in its stomach is more or less digested, according to the time elapsed since eating to the death of the animal.

Cutting into two the eighth pair of nerves in the neck is clearly to deprive the stomach of its nervous power, so that digestion cannot be affected; for if the animal be allowed to live a considerable time after these nerves are divided in the neck, the food in the stomach, if the animal had previously had a full meal, is always found unaltered; and, therefore, the division of those nerves, by depriving the stomach of all nervous power, prevents the due secretion of the gastric juice.

NERVOUS POWER.

Hence it is obvious that muscular action alone, unaided by nervous energy, will not effect digestion. In those experiments termed artificial digestion, which consists in mixing

alimentary substances with the gastric juice, and exposing it to the same temperature as the stomach, we find the food is not reduced into *chyme*. Dr. Beaumont, who obtained the gastric juice from St. Martin, tried its effects on different articles of food, and kept it in a close vessel exposed to the heat of 100 degrees, and imitated the muscular action of the stomach by frequently agitating the vessel, observed that the food dissolved with readiness, and even became altered, but *chyme could not be produced*. These experiments teach us that there is something more required in the process of digestion in the stomach than its muscular power, its gastric juice, or its temperature. There is a continuance of nervous or vital power required, and which, in health, does exist, and operates on every organ, and influences them to the performance of their destined functions. These functions cannot be performed out of the body.

Having shown that the various functions and movements in organized bodies depend on nervous power, we have now to inquire of what that power consists. The discoveries in chemistry render very evident the analogy or close affinity existing between *nervous power* and some of the *gases* which that science has unfolded to our view. We see the extraordinary influence which some of them possess over the nervous fibers, and in a manner so very remarkable as leaves no room to doubt that the nervous power itself is a fluid.

We have seen that the influence of the eighth pair of nerves is interrupted by dividing them at the neck, and particularly when a portion of them is removed, the formation of chyle is prevented. But it has been found, by repeated experiments, that if neither of the divided ends be displaced, some nervous influence passes along the cut nerve, and does so, although the divided ends be separated by the space of one-eighth of an inch. Dr. W. Philip, Breschet, and others, have repeatedly proved in their experiments on this curious subject, that *galvanism*, applied to the stomach after the division of the eighth pair of nerves in the neck, restores the digestive process; and hence we have a reasonable foundation for the opinion—that *vital energy*, or *nervous power*, is identical in its effects

with the galvanic fluid. We are enabled to ascertain, by many experiments, that galvanic electricity possesses a powerful influence over the nervous system in the living subject, and over the muscles after death.

Having briefly viewed the mode in which the body moves and lives, I will now explain what I think is the cause of most all diseases.

"All diseases resemble each other in their form, invasion, march and decline. . . . The type of all diseases is one and the same."

—HIPPOCRATES.

All diseases may be divided into two classes—*acute* and *chronic*. Those disorders may be termed acute which continue only for a few hours, days or weeks, the *exciting* or *external* causes of which generally act energetically and immediately on the system. All diseases, whatever be their name, character, or seat, are termed *chronic*, when they have continued for months or years, and are produced by causes which operate slowly, perhaps imperceptibly, on the system.

In the last chapter it was shown that it is *nervous power* which influences the organs of digestion—of sanguification—and of assimilation to perform their functions ; the importance, therefore, of this power in the economy of health and life will be apparent. Health suffers when this power is either *depressed* or unusually *excited* ; when it is *depressed to extinction*, then life ceases.

Such I believe to be the physiological facts, that ALL DISEASES, whether acute or chronic, arise from one uniform internal cause, namely, DEBILITY, either *general* or *local*, from DEPRESSION OF NERVOUS POWER ; whence proceed *relaxation* of the *solids* and *corruption of the fluids*. Subsequent chemical investigations, and repeated examinations of diseased and healthy organic structures with the microscope, amply demonstrated the correctness of this view. *Nervous depression* may produce the effects alluded to, either instantaneously or slowly and progressively, according to the nature of the operating or exciting causes.

Depression of nervous power produces morbid effects in the system by a twofold process, which I will try to explain.

If the reader has carefully perused the foregoing pages, he will have seen that the body is sustained and continued in good health by the regular supply of good blood ; and that this important fluid is produced by "nervous power."

According to analysis, healthy blood is composed of the following principles :—

In one thousand parts there are—

Water	782.87
Fibrin.....	2.88
Albumen.....	67.25
Coloring matter.....	126.81
Fatty matter.....	5.16
Extractive matter, soluble in alcohol.....	1.86
Albuminate of soda	1.64
Muriate of soda and potass., carbonate, phosph. and } sulph. of soda.....	7.84
Carbonate of lime and magnesia, phosph. lime and } magnesia and iron	1.75
Loss during analysis	2.49
<hr/>	
	1000.00

Organic chemistry teaches us that the *albumen* and *fibrin* of the blood are the *nutritious* principles, and when these become deficient in their relative proportions to the other parts of the blood, health suffers. If nervous power be *depressed*, then the food is imperfectly digested, the chyme imperfectly prepared, the chyle lessened in quantity, and, therefore, the proportional principles of the blood become disturbed ; its *nourishing* principles are *decreased* ; the watery and saline principles are *augmented*, and a morbid condition of the important fluid ensues, with the numerous ills attendant thereon. Indigestion, more or less, occurs in every case of disease ; indeed, the stomach is generally the first organ that becomes affected by diminished nervous power, and as it is connected with every part of the body by a direct chain of nervous communication, all parts of the system, therefore, sympathize in its disorder ; and certain it is there is no disease, whether local or general, in which the digestive functions

are not impaired, and in many cases completely suspended. Hence, in the treatment of every case of disease, the stomach requires our earliest consideration.

Nervous debility also produces important morbid changes in the *capillary* system of blood vessels, in the following manner:—During health these capillary vessels are kept in a half-contracted state by virtue of the nervous influence shed upon them; but when the nervous power becomes diminished, from

the operation of any physical or mental cause, these vessels become relaxed and weakened, their diameters enlarge, and their contraction of the blood circulating within them is diminished. This relaxed state of the capillaries now admits of a greater current of blood, and its motion through them necessarily becomes slower and more stagnant, and a state of congestion ensues, accompanied by inflammation of the coats of these vessels, when their secretions become deranged, and the result is the formation of morbid matter in the blood.

If the disease be hereditary or acquired weakness of any organ or part, as may be further explained as follows:—When *depressed nervous energy* enfeebles the muscular action of the stomach, and lessens its power of secreting the necessary supply of gastric juice, then the certain result will be:—

INDIGESTION, with one or more of its numerous train of effects, such as *flatulence, colic, habitual costiveness, biliary and liver complaints, diabetes, atrophical consumption, giddiness, fainting, epileptic and apoplectic fits, pains in the head, St. Vitus's dance, female complaints, jaundice, dropsy, etc.*

The effects (designated *diseases*) which arise in the system by the presence of morbid matter—produced as before explained—are almost innumerable, and vary according to the part of the body which is most susceptible to its irritating influence, thus:

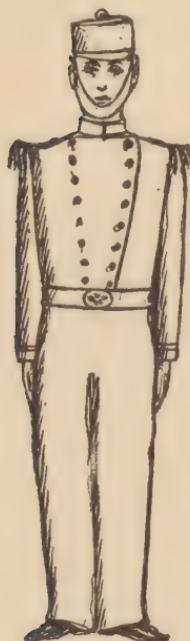


FIG. 116.

Inflammation of the lungs, liver, bowels, kidneys, etc., etc., is produced when impure matter accumulates and irritates the capillary vessels of these vital parts.

Fever, which may vary and be designated according to the part principally affected, is produced when the whole system is oppressed and irritated by a sudden accumulation of morbid matter; from any cause which powerfully depresses the nervous power. Hence it is evident that *fever* and *inflammation* are of the same nature, varying only in degree and the parts affected.

Scurvy, Boils, Ulcers, etc., arise when nature strives to expel impure matter from the system by the *skin*.

Dysentery, Diarrhoea, etc., are produced when the system endeavors to throw off morbid matter by the *bowels*.

Gravel arises when morbid matter is expelled by the *bladder*, in which case it frequently produces an excessively painful irritation of that organ.

Stone in the Bladder.—Hard concretions in the bladder are formed by an accumulation of morbid matter in that organ.

Gout and *Rheumatism*.—Often it happens that there is such an excessive generation of morbid matter that it cannot be expelled by the bladder as readily as it is formed. In these cases it is deposited in the *ligaments* and *joints*, giving rise to *gout* and *rheumatism*; and hence is the reason why gravel so frequently precedes these complaints, and is often present with them. *Gravel, gout, and rheumatism*, are, therefore, the same in nature, only differing according to the parts affected.

Pulmonary Consumption and *Scrofula*.—When morbid matter is deposited in the *lungs*, it produces *pulmonary consumption*; when it is deposited in the *glands*, it produces *abscesses, tumors, etc.*, termed *scrofula*. Both these complaints are, consequently, the same in principle, only differing according to the parts affected. The matter contained in scrofulous tumors is identically the same in its chemical principles as that discharged from the lungs in consumption.

Cough, Asthma, Bronchitis, etc..—When morbid matter

is deposited in the branches of the *windpipe* or *bronchial tubes*, it gives rise to distressing *cough, asthma*, etc.

Causes of sudden death from accident, fright, drowning, etc., etc., do not militate against the theory of disease just explained. In such instances there is at once a *total extinction* of nervous power, without, perhaps, any previous disease.

Hence are all the dissimilar diseases mentioned, and every other disease to which the body is subject, derived from one and the same internal cause. This system is not founded in conjecture, but on the **LAWS OF LIFE**, confirmed by scientific research and extensive observations of human suffering, both physical and mental, during a period of more than a quarter of a century. That all diseases originate in *debility*, either local or general, from *depression of nervous power*, the history and symptoms of every case fully testify; and, on the contrary, all diseases reciprocally tend to debilitate the nervous and muscular systems. Hence **DEBILITY** is not only the **CAUSE**, but the **CONSEQUENCE**, of **ALL DISEASES**.

Thus the veil which has so long obscured the *cause* of disease is drawn aside, and thus the contradictory doctrines of the medical schools are shown to be unfounded. How different are those views from the baseless and contradictory medical theories which have for so many ages prevailed in the world—theories which ascribe to disease origins as numerous as its symptoms !

EXTERNAL OR PRODUCING CAUSES OF DISEASE.

The *producing* or *exciting* causes of disease are infinite, and comprise everything that connects us, directly or indirectly, with the external world, first acting upon the body through the different modifications of nervous perception. Some of these causes at first stimulate, but *all* finally tend to depress vital energy and to induce debility. Exciting causes are of two kinds, namely, *mental* and *physical*. The *mental* comprises all things which affect the body through the *mind*, causing a suspension more or less of nervous power, and

therefore of debility, as explained in the last chapter—such as excessive joy, anger, and ill-temper, grief, sudden surprise or fright, hard study, and every other thing which comes within the province of the *passions*. The *physical* causes are those which attack the nerves themselves and enfeeble their power—such as indulgence in hot relaxing fluids, intemperance in eating and drinking, loss of blood, impure air, indolence, a sedentary life, and all other agents of a debilitating kind. I will make a few remarks on some of the principal causes ; and, first, of those which affect the body through the mind.

Mental causes.—The mind effects its operations on the body through the medium of the nervous system, of which the brain is the center ; but of the nature of the connection of mind with body—of spirit with matter—we are entirely ignorant. Nervous power, as before remarked, is the principle of life ; infringement of that power is the cause of disease ; and its total suspension is the cause of death. Mental causes, by diminishing nervous power, produce disease by debilitating the stomach and capillary vessels. I have before shown that digestion is performed by nervous agency, and hence its disturbance by mental causes ; hence also we see how a healthy condition of the stomach so depends on tranquility of the mind.

Excessive joy.—Such is the influence which the mind possesses over the body, that strong impressions made on it frequently suspend the appetite—sometimes instantaneously. This occurs under either the *exciting* or the *depressing* passions.

Excessive joy has sometimes produced instant death.

In an old English newspaper, I cut a clipping of May 27th, 1854. I read that, upon the occasion of announcing a free discharge to the convicts in Newgate prison, Dublin, who were under sentence of penal servitude, so overjoyed were four of them at the sudden intelligence, that two of them dropped down dead !

Anger and ill-temper cause depression of nervous power. Cheerful, gay, and joyous-tempered people have, generally, a keen appetite and strong digestive powers, and are not only the most healthy, but sleep the most soundly. Shakespeare,

no doubt, had this important fact in view, when he made Cæsar exclaim :—

“Let me have men about me that are *fat*,
Sleek-headed men, and such as sleep o’ nights :
Yonder Cassius has a *lean and hungry look* ;
He thinks too much ; such men are dangerous.”

Both in a physical and moral respect, an ill-temper is a real curse to the possessors, and is little less so to the unfortunate creatures who are obliged to live with them ; it is real martyrdom to hear one eternal round of complaint and murmuring, to have every pleasant thought and word scared away as by an evil spirit. An ill-temper is like the sting of a scorpion,—a perpetual nettle, with an influence so deadly that the purest and sweetest atmosphere is contaminated into a poisonous miasma wherever this evil genius prevails. One string out of tune will destroy the music of an instrument otherwise perfect ; so will one peevish, crabbed individual destroy the comfort of a numerous household, no matter how blameless every other member may be.

Grief and suspense.—I have known a sudden fit of intense grief, in consequence of an unexpected family bereavement, to change the hair from black to gray in one night, and lay the body completely prostrate. *Suspense* has the same depressing effect on both body and mind :—

Sudden surprise and fright.—These emotions of the mind exert an extraordinary influence on the body ; in some cases instantaneously suspending the action of the stomach by withdrawing all nervous power. If a person receives sudden distressing news on sitting down to dinner, although he were as hungry as a wolf the moment before, his appetite would immediately leave him. Sudden mental emotions will produce sudden illness.

I knew of a case of a lady whose only son had long been absent in a foreign country, and from the lack of intelligence it was supposed he was dead. She had just come in from her usual morning’s walk, and had sat down to breakfast, when at that moment a wandering minstrel commenced singing un-

der her window the beautiful song beginning with these pathetic words, "The absent will return, the long, long lost be found!" These words were scarcely uttered when the lady shrieked,—"Never! Ah! never, never! He will never return!" and fell senseless on the floor. One fainting fit succeeded another; suitable restoratives were applied, but it was many days ere she recovered.

I read of a laboring man who was drinking and singing at a public house. The song was "Annie Laurie;" and when he came to the words, "I'll lay me down and dee," he threw his head back. The persons present thought he did it for effect; after waiting a short time they endeavored to rouse him, but he was dead.

Part of the above I copied from an old English journal from time to time. It agreed with my ideas and belief so well that I inserted it here, hoping that my readers may be enabled to benefit thereby.

A corporal of the *garde de Paris*, named Venot, anxious to see the execution of Orsini and Pierri, went at a very early hour on that day to the Place de la Roquette, and succeeded in getting near the scaffold. The emotion he experienced on seeing the two men put to death was so great that he became ill, and was seized with violent trembling. He was sent to the military hospital, and expired on the following day.

Strong emotions will produce madness:—

Dr. Livingston brought a native from the interior of Africa, who, when he got to the Mauritius, was so excited with the steamers and various wonders of civilization, that he went mad, jumped into the sea, and was drowned.

A gentleman on the point of marriage left his intended bride for a short time. He usually traveled in the stage-coach to the place of her abode. The last journey he took from her was the last of his life. Anxiously expecting his return, she went to meet the vehicle. An old friend announced to her the death of her lover. She uttered an involuntary scream and piteous exclamation, "*He is dead!*" From that fatal moment for fifty years has this unfortunate female daily, in all seasons, traversed the distance of many miles to the spot where

she expected her future husband to alight from the coach, each time uttering in a plaintive tone, "*He is not come yet ;—I will return to-morrow.*"

In my remarks on "Life and Death," I have shown the identity of the electric fluid and nervous power, and nothing can more forcibly prove their similarity than excessive fright. For a moment the very eyes flash *fire*; the hair becomes *electric*, and stands erect; the heart palpitates; the body is thrown into an attitude for escaping; but the danger being inevitable, cold sweats succeed; the hair droops, the eyes become dim, the surface placid, cold and pale: the person sinks down inanimate.

Very many authenticated cases might be related in which fright and other sudden mental emotions have not only produced disease, insanity and death, but *cured* long-standing complaints. I have only room for the following instance:—

The *Illustrated London News*, June 15, 1861, contains the following paragraph, of rheumatism being cured by fright:—"The *Bristol Mercury* relates the case of a man, who, at one shot, killed three pigeons, wounded a fourth, broke several panes of glass, and *cured* a rheumatic cripple by frightening him into the use of his limbs."

Hard study is another direct cause of indigestion and debility. Energetic action cannot be kept up in the brain and stomach at the same time. If the mind be intently occupied with profound thought, the nervous power will be concentrated in the brain, and the stomach being deprived of it, indigestion and disease ensue; hence the weak digestion and sallow complexion of literary men, and their constant complaints of ill health.

Numerous other mental and exciting causes of disease might be added, but a few remarks must now be made on those causes—termed physical—which affect the nervous system itself.

Hot relaxing fluids.—The habitual use of *hot* fluids is a slow but certain cause of nervous weakness. They act by debilitating the nervous fibers, hence the muscular power of the stomach is impaired and rendered unable to digest nourish-

ing food. Those persons who really prefer tea and coffee to other articles must render them lukewarm by the addition of milk, and on no account take them without sugar. The best teas are the less injurious to the nerves, and are, moreover, the cheapest.

One would really think that common sense would teach people not to take any fluid of greater heat than that of the body; and I cannot comprehend for what purpose a custom should be followed which is so highly injurious to the muscular system, unless it is that the sipping of hot tea, by causing a longer continuance at table, necessarily creates a more protracted gossip. It is an historical fact that complaints of the stomach and consumptions were not near so prevalent prior to the custom of taking these hot beverages; and, at this time, it will be found that those who do not take their food above lukewarm are the most free from indigestion. But what signifies indigestion and its maladies, when balanced against the much-coveted and eagerly-sought-after gossip of fashionable tea-parties? Pooh! And as to consumption, why that disease only carries off about one-fourth of the inhabitants; and what of that when compared with the inestimable pleasures of the tea-table!

Are not young children taught, hired, and bribed to gormandize, from their earliest years? Do they not devour all sorts of eatables, until they have not room for more? Do not children of "a larger growth" *paralyze* digestion and sacrifice their health, for the baby pleasure of tickling their tongues with a dozen different meats? After all, perhaps there is more of ostentation and vanity in those people who set out a concourse of different dishes and courses, than a wish to gratify the appetites of the guests. We need not, however, be surprised at the prevalence of indigestion in *civilized* nations.

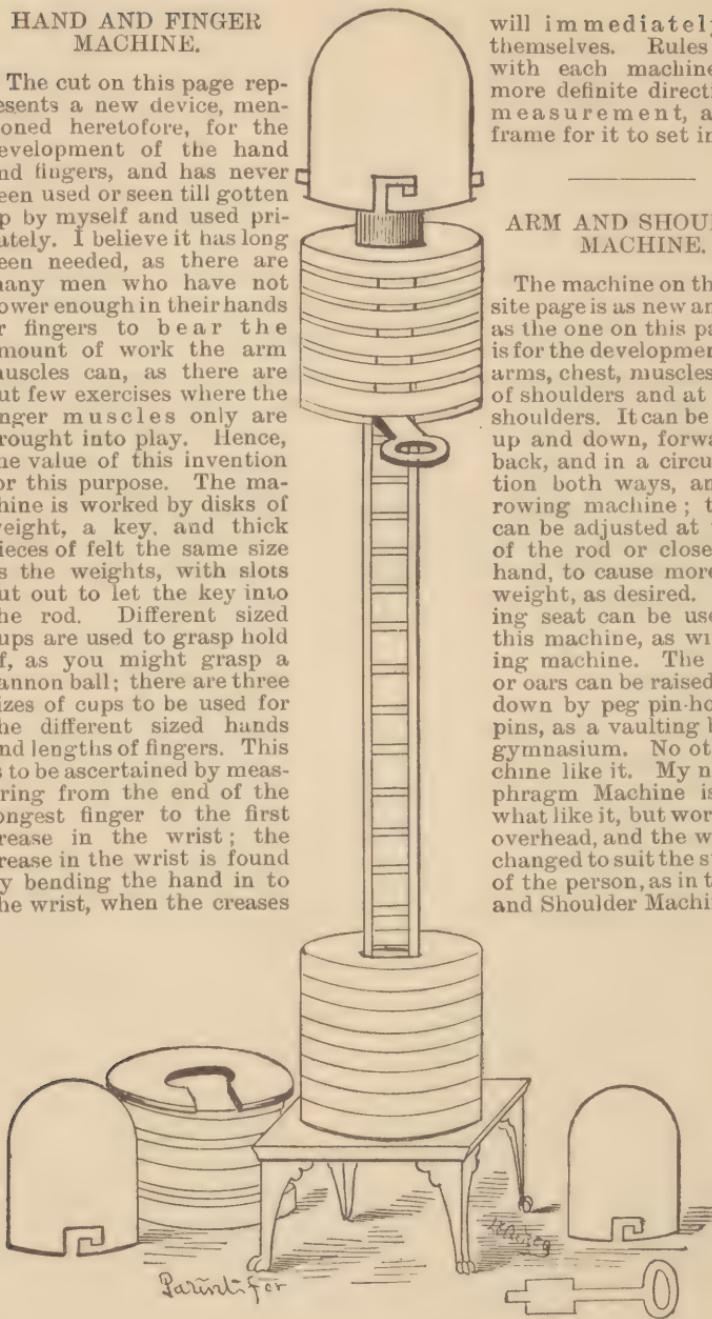
HAND AND FINGER MACHINE.

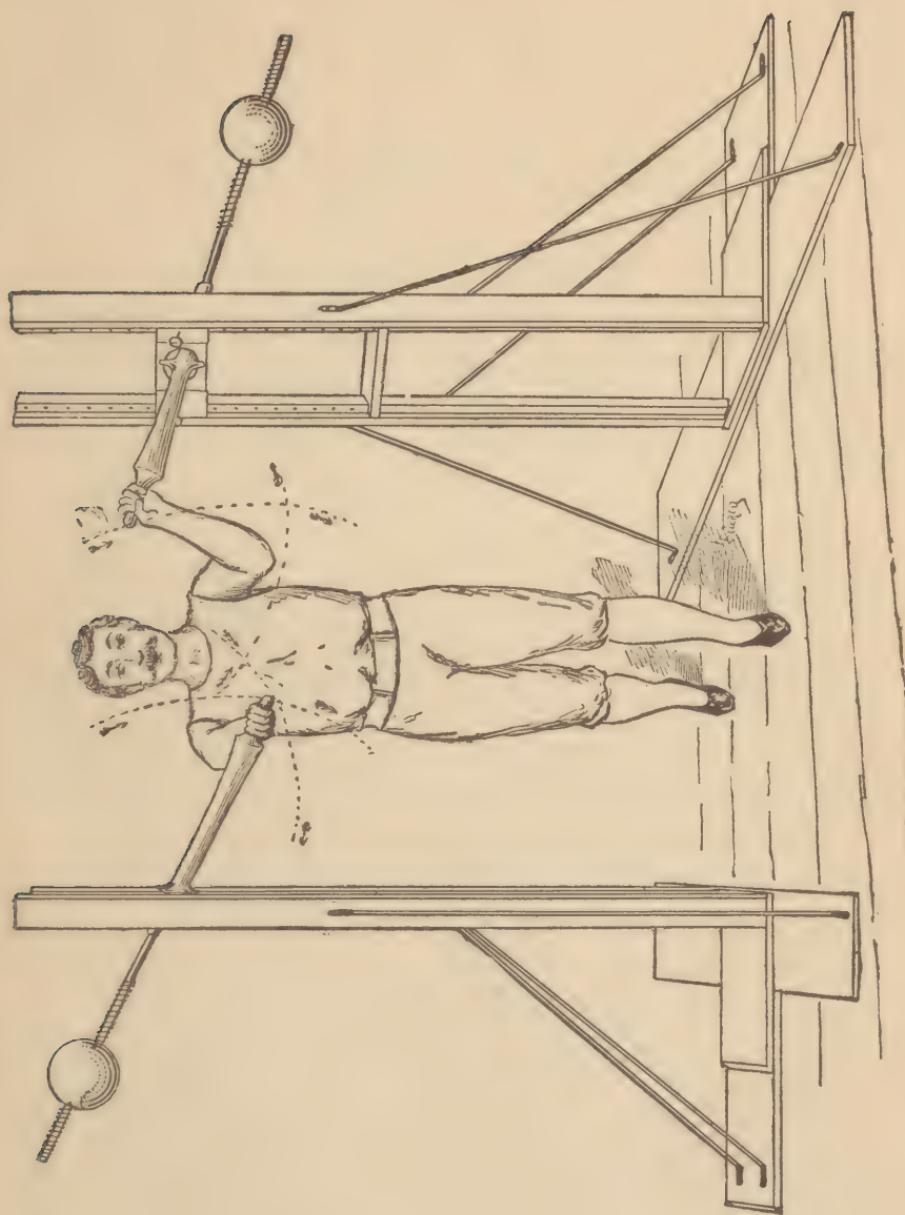
The cut on this page represents a new device, mentioned heretofore, for the development of the hand and fingers, and has never been used or seen till gotten up by myself and used privately. I believe it has long been needed, as there are many men who have not power enough in their hands or fingers to bear the amount of work the arm muscles can, as there are but few exercises where the finger muscles only are brought into play. Hence, the value of this invention for this purpose. The machine is worked by disks of weight, a key, and thick pieces of felt the same size as the weights, with slots cut out to let the key into the rod. Different sized cups are used to grasp hold of, as you might grasp a cannon ball; there are three sizes of cups to be used for the different sized hands and lengths of fingers. This is to be ascertained by measuring from the end of the longest finger to the first crease in the wrist; the crease in the wrist is found by bending the hand in to the wrist, when the creases

will immediately show themselves. Rules come with each machine, with more definite directions for measurement, and the frame for it to set in.

ARM AND SHOULDER MACHINE.

The machine on the opposite page is as new and novel as the one on this page. It is for the development of the arms, chest, muscles on top of shoulders and at back of shoulders. It can be worked up and down, forward and back, and in a circular motion both ways, and as a rowing machine; the ball can be adjusted at the end of the rod or close to the hand, to cause more or less weight, as desired. A sliding seat can be used with this machine, as with rowing machine. The handles or oars can be raised up and down by peg pin-holes and pins, as a vaulting bar in a gymnasium. No other machine like it. My new Diaphragm Machine is somewhat like it, but works from overhead, and the weight is changed to suit the strength of the person, as in the Arm and Shoulder Machine.





APPENDIX.

BAR-BELLS AND DUMB-BELLS.

Corrected up to January 1, 1895.

- Tossing up one bar-bell, weighing 332.815 lbs., with both hands, from the ground to breast, and then from breast to full arm's length above the shoulder—Austria, W. Tuerk, Vienna, February 22, 1893.
- Tossing up one bar-bell weighing 280.29 lbs., with both hands, once from the ground to breast, and twice from breast to full arm's length above the shoulder—Austria (1), C. Reppel, Vienna, January 3, 1888.
- Tossing up one bar-bell, weighing 276.978 lbs., with both hands, from ground to breast, and then pushing it up fairly twice from breast to full arm's length above the shoulder—Austria, W. Tuerk, Vienna, April 8, 1892.
- Tossing up one bar-bell, weighing 254.24 lbs., with both hands, from ground to breast, and then fairly pushing it up with both hands three times from breast to full arm's length above the shoulder—W. Tuerk, Vienna, February 2, 1893.
- Tossing up one bar-bell, weighing 250.49 lbs., with both hands, once from ground to breast, and then seven times from breast to full arm's length above the shoulder—Austria, W. Tuerk, Vienna, April 8, 1892.
- Tossing up one bar-bell, weighing 245.81 lbs., with both hands, once from ground to breast, and three times from breast to full arm's length above the shoulder—Austria (2), F. Staehr, Vienna, December 9, 1885.
- Tossing up one bar-bell, weighing 212.75 lbs., with both hands, from ground to breast, and then with left hand alone from breast to full arm's length above the shoulder—Austria, Cyrill Wetasa, Vienna, February 22, 1893.
- Tossing up one bar-bell, weighing 210.56 lbs., with one hand, from ground to shoulder, and then pushing it up fairly from shoulder to full arm's length above the shoulder—Austria, F. Staehr, Vienna, December 17, 1885.
- Tossing up one bar-bell, weighing 170 lbs., with both hands, from ground to breast, then pushing it up fairly from breast to full arm's length above the shoulder, then lowering it slowly to shoulder, behind the neck, raising it again slowly to full arm's length above the shoulder, lowering it slowly to breast and thence to ground, the athlete being all the while seated in a chair—England (3), E. L. Levy, Birmingham, November 3, 1892.
- Tossing up one bar-bell, weighing 170 lbs., with both hands, ten times from breast to full arm's length above the shoulder—England, E. L. Levy, Northampton, November 16, 1892.
- Tossing up one bar-bell, weighing 167.99 lbs., with one hand, from ground to full arm's length above the shoulder—Austria, W. Tuerk, Vienna, September 15, 1891.
- Tossing up one bar-bell, weighing 150 lbs., with both hands, fourteen times from breast to full arm's length above the shoulder—England, E. L. Levy, London, January 8, 1892.

- Tossing up one dumb-bell, weighing 201 lbs. 5 oz., with both hands, from ground to shoulder, and then pushing it up fairly with one hand from shoulder to full arm's length above the shoulder—America, R. A. Pennell, New York City, January 31, 1874.
- Tossing up one dumb-bell, weighing 121.6 lbs., with one hand, from ground to shoulder, and then pushing it up twice with one hand, from shoulder to full arm's length above the shoulder, standing in the position of a soldier—body erect, shoulders level, moving only the right arm—Austria, M. Walz, Vienna, April 8, 1892.
- Tossing up one dumb-bell, weighing 201 lbs., with one arm, six times, from shoulder to full arm's length above the shoulder—America (4), C. O. Breed, Boston, Mass., January 30, 1884.
- Pushing up one dumb-bell, weighing 121 lbs., eight times with one hand, from shoulder to arm's length above the shoulder—England, E. L. Levy, March 30, 1891.
- Pushing up one dumb-bell, weighing 112 lbs., fourteen times, with one hand, from shoulder to full arm's length above the shoulder—England, E. L. Levy, Birmingham, December 22, 1891.
- Tossing up one dumb-bell, weighing 110.129 lbs., with one hand, from ground to shoulder, and then pushing it up five times, with one hand, from shoulder to full arm's length above the shoulder, standing in the position of a soldier—body erect, shoulders level, moving only the right arm—Austria, F. Staehr and M. Walz, Vienna, April 8, 1892.
- Pushing up one dumb-bell, weighing 109.78 lbs., twenty-five times, with one hand, from the shoulder to full arm's length above the shoulder—Austria, F. Staehr, Vienna, December 17, 1885.
- Pushing up one dumb-bell, weighing 109.78 lbs., three times, with one hand, from shoulder to full arm's length above the shoulder; standing in the position of a soldier—body erect, shoulders level, moving only the right arm—Austria, F. Staehr, Vienna, December 9, 1885.
- Pushing up one dumb-bell, weighing 106½ lbs., twelve times, with one hand, from shoulder to full arm's length above the shoulder—England, E. L. Levy, London, March —, 1891.
- Pushing up one dumb-bell, weighing 104 lbs., eleven times, with one hand, from shoulder to full arm's length above the shoulder—America, G. D. Parmly, New York City, February 4, 1878.
- Pushing up one dumb-bell, weighing 100 lbs., twenty times, with one hand, from shoulder to full arm's length above the shoulder—America, G. N. Robinson, San Francisco, Cal., November 25, 1875.
- Pushing up one dumb-bell, weighing 51 lbs., eighty times, with one hand, from shoulder to full arm's length above the shoulder—America, G. N. Robinson, San Francisco, Cal., November 20, 1883.
- Pushing up one dumb-bell, weighing 50 lbs., ninety-four times, with one hand, from shoulder to full arm's length above the shoulder—America, A. A. Hylton, San Francisco, Cal., May 19, 1885.
- Pushing up one dumb-bell, weighing 25 lbs., four hundred and fifty times, with one hand, from shoulder to full arm's length above the shoulder—America, G. W. W. Roche, San Francisco, Cal., November 25, 1875.
- Pushing up one dumb-bell, weighing 12 lbs., 14,000 times, with one hand, from shoulder to full arm's length above the shoulder—America, A. Corcoran, Chicago, Ill., October 4, 1873.
- Pushing up one dumb-bell, weighing 10 lbs., 8,431 times, with one hand, from shoulder to full arm's length above the shoulder—America (5), H. Pennock, New York City, December 14, 1870.
- Tossing up from ground to shoulder, and thence to full arm's length above the

shoulder, two dumb-bells at the same time, the one in the right hand weighing 159.83 lbs., and the one in the left hand weighing 150.35 lbs.—Austria, W. Tuerk, Vienna, September 15, 1891.

Tossing up from ground to shoulder once, and from shoulder to full arm's length above the shoulder twice, two dumb-bells at the same time, one in each hand, each weighing 121.38 lbs.—Austria, C. Reppel, Vienna, January 11, 1888.

Tossing up from ground to shoulder, and then pushing up fairly from shoulder to full arm's length above the shoulder, two dumb-bells at the same time, the one in the right hand weighing 132.86 lbs., and the one in the left hand weighing 128.66 lbs.—Austria, W. Tuerk, Vienna, April 8, 1892.

Pushing up fairly from shoulder to full arm's length above the shoulder, two dumb-bells at the same time, the one in the right hand weighing 112 lbs., and the one in the left hand weighing 110 lbs.—England, E. L. Levy, Birmingham, January —, 1894.

Curling and putting up from shoulder to full arm's length above the shoulder, two dumb-bells at the same time, the one in the right hand weighing 112 lbs., and the one in the left hand weighing 100 lbs.—England, E. L. Levy, Birmingham, November 28, 1893.

Tossing up from ground to shoulder, and then pushing up fairly from shoulder to full arm's length above the shoulder two dumb-bells at the same time, the one in the right hand $104\frac{1}{2}$ lbs. and the one in the left hand 100 lbs.—England, E. L. Levy, Birmingham, July 23, 1891.

Tossing up from ground to shoulder two dumb-bells at the same time, one in each hand, the one in the right hand weighing 106 lbs. and the one in the left hand weighing 60 lbs.; then pushing the 106 lbs. from shoulder to full arm's length above the shoulder, and at the same time holding out the 60 lbs. with arm extended at right angle to the body—England, E. L. Levy, London, January 18, 1892.

Curling and putting up from shoulder to full arm's length above the shoulder, two dumb-bells at the same time, one in each hand, each weighing 100 lbs.—America (6), (7), W. B. Curtis, Chicago, Ill., September 10, 1850.

Pushing up fairly, six times, from shoulder to full arm's length above the shoulder, two dumb-bells at the same time, the one in the right hand weighing 100 lbs. and the one in the left hand weighing 84 lbs.—England, E. L. Levy, Birmingham, November 28, 1893.

Curling two dumb-bells, one in each hand, each weighing 84 lbs., and then pushing them up alternately seventeen times from the shoulder to full arm's length above the shoulder—England, E. L. Levy, Birmingham, April 6, 1891.

Holding out two dumb-bells at the same time, one in each hand, with arms extended horizontally at right angles to the body, the one in the right hand weighing $73\frac{1}{2}$ lbs., the one in the left hand weighing $60\frac{1}{2}$ lbs.—England, E. L. Levy, Birmingham, November 30, 1892.

Curling two dumb-bells, one in each hand, each weighing 56 lbs., and then pushing them up alternately eighty-seven times from shoulder to full arm's length above the shoulder—England, E. L. Levy, Birmingham, May 16, 1891.

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